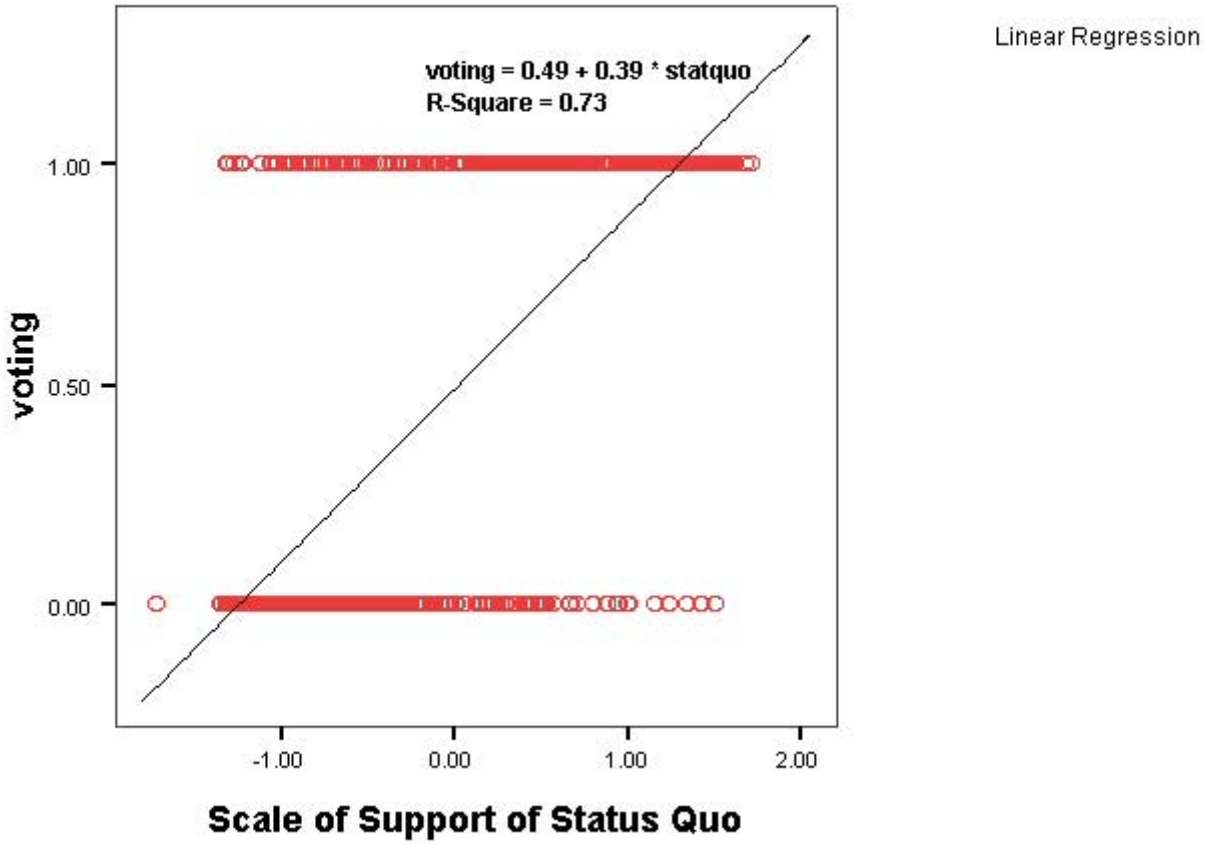
SPSS Textbook Examples
Applied Regression Analysis by John Fox
Chapter 15: Logit and probit models

page 440 Figure 15.1 Scatterplot of voting intention (1 represents yes, 0 represents no) by a scale of support for the status quo, for a sample of Chilean voters surveyed prior to the 1988 plebiscite. The points are jittered vertically to minimize overlapping. The solid straight line shows the linear least-squares fit; the solid curved line shows the fit of the logistic regression model; the broken line represents a lowess nonparametric regression.

NOTE: SPSS will not allow the multiple regression lines to be placed on a single graph. Also, we do not know how to do a lowess non-parametric regression in SPSS.

```
GET FILE='D:\chile.sav'.
if intvote = 1 voting = 1.
if intvote = 2 voting = 0.

IGRAPH
 /X1 = VAR(statquo)
 /Y = VAR (voting)
 /FITLINE METHOD = REGRESSION LINEAR LINE = TOTAL
 /SCATTER COINCIDENT = NONE.
```



page 452 Table 15.1 Deviances (-2 log likelihood) for several models fit to the women's labor force participation data. The following code is used for terms in the models: C constant; I husband's income; K presence of children; R region. The

column labeled K + 1 gives the number of regressors in the model, including the constant.

```
GET FILE='D:\womenlf.sav'.

if workstat = 1 or workstat = 2 ws = 1.
if workstat = 0 ws = 0.
compute ik = husbinc*chilpres.
compute cons = 1.
compute rgn1 = 0.
if region = "Atlantic" rgn1 = 1.
compute rgn2 = 0.
if region = "BC" rgn2 = 1.
compute rgn3 = 0.
if region = "Ontario" rgn3 = 1.
compute rgn4 = 0.
if region = "Prairie" rgn4 = 1.
compute rgn5 = 0.
if region = "Quebec" rgn5 = 1.
execute.
```

model 0 with C:

NOTE: SPSS will not allow a regression without a predictor. (i.e., just the constant). Therefore, you need to create a variable - here we created **const**. Then we entered our constant with the **/noconst** subcommand, which, in effect, gives us a model with just a constant.

```
LOGISTIC REGRESSION VAR=ws
 /METHOD=ENTER cons
 /noconst.
```

Case Processing Summary

Unweighted Cases(a)		N	Percent
Selected Cases	Included in Analysis	263	100.0
	Missing Cases	0	.0
	Total	263	100.0
Unselected Cases		0	.0
Total		263	100.0

a If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
.00	0
1.00	1

Classification Table(a,b,c)

			Predicted		
			WS		Percentage Correct
	Observed		.00	1.00	
Step 0	WS	.00	0	155	.0
		1.00	0	108	100.0

	Overall Percentage			41.1
a No terms in the model.				
b Initial Log-likelihood Function: -2 Log Likelihood = 364.595				
c The cut value is .500				

Variables not in the Equation					
			Score	**df**	**Sig.**
Step 0	**Variables**	**CONS**	8.399	1	.004
	Overall Statistics		8.399	1	.004

Omnibus Tests of Model Coefficients				
		Chi-square	**df**	**Sig.**
Step 1	**Step**	8.445	1	.004
	Block	8.445	1	.004
	Model	8.445	1	.004

Model Summary			
Step	**-2 Log likelihood**	**Cox & Snell R Square**	**Nagelkerke R Square**
1	356.151	.032	.042

Classification Table(a)					
			Predicted		
			WS		**Percentage Correct**
	Observed		**.00**	**1.00**	
Step 1	**WS**	**.00**	155	0	100.0
		1.00	108	0	.0
	Overall Percentage				58.9
a The cut value is .500					

Variables in the Equation							
		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**
Step 1(a)	**CONS**	-.361	.125	8.308	1	.004	.697
a Variable(s) entered on step 1: CONS.							

model 1 with C, I, K, R, I*K:

```
LOGISTIC REGRESSION VAR=ws
 /METHOD=ENTER husbinc chilpres rgn2 rgn3 rgn4 rgn5 ik.
```

Case Processing Summary

Unweighted Cases(a)		N	Percent
Selected Cases	Included in Analysis	263	100.0
	Missing Cases	0	.0
	Total	263	100.0
Unselected Cases		0	.0
Total		263	100.0
a If weight is in effect, see classification table for the total number of cases.			

Dependent Variable Encoding	
Original Value	Internal Value
.00	0
1.00	1

Classification Table(a,b)					
			Predicted		
			WS		Percentage Correct
	Observed		.00	1.00	
Step 0	WS	.00	155	0	100.0
		1.00	108	0	.0
	Overall Percentage				58.9
a Constant is included in the model.					
b The cut value is .500					

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.361	.125	8.308	1	.004	.697

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	HUSBINC	4.928	1	.026
		CHILPRES	31.599	1	.000
		RGN2	1.530	1	.216
		RGN3	.008	1	.929
		RGN4	.244	1	.622
		RGN5	.242	1	.623
		IK	25.164	1	.000
	Overall Statistics		38.657	7	.000

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	39.609	7	.000
	Block	39.609	7	.000
	Model	39.609	7	.000

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	316.542	.140	.188

Classification Table(a)					
			Predicted		
			WS		Percentage Correct
	Observed		.00	1.00	
Step 1	WS	.00	135	20	87.1
		1.00	58	50	46.3
	Overall Percentage				70.3
a The cut value is .500					

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	HUSBINC	-.068	.034	4.094	1	.043	.934
	CHILPRES	-2.139	.692	9.567	1	.002	.118
	RGN2	.331	.585	.320	1	.571	1.392
	RGN3	.183	.466	.154	1	.694	1.201
	RGN4	.469	.557	.709	1	.400	1.599
	RGN5	-.203	.502	.163	1	.686	.816
	IK	.036	.041	.755	1	.385	1.037
	Constant	1.625	.698	5.414	1	.020	5.078
a Variable(s) entered on step 1: HUSBINC, CHILPRES, RGN2, RGN3, RGN4, RGN5, IK.							

model 2 with C, I, K, R:

```
LOGISTIC REGRESSION VAR=ws
 /METHOD=ENTER husbinc chilpres rgn2 rgn3 rgn4 rgn5.
```

Case Processing Summary			
Unweighted Cases(a)		N	Percent
Selected Cases	Included in Analysis	263	100.0
	Missing Cases	0	.0
	Total	263	100.0
Unselected Cases		0	.0
Total		263	100.0

a If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding	
Original Value	**Internal Value**
.00	0
1.00	1

Classification Table(a,b)					
			Predicted		
			WS		Percentage Correct
	Observed		.00	1.00	
Step 0	WS	.00	155	0	100.0
		1.00	108	0	.0
	Overall Percentage				58.9

a Constant is included in the model.

b The cut value is .500

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.361	.125	8.308	1	.004	.697

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	HUSBINC	4.928	1	.026
		CHILPRES	31.599	1	.000
		RGN2	1.530	1	.216
		RGN3	.008	1	.929
		RGN4	.244	1	.622
		RGN5	.242	1	.623
	Overall Statistics		37.765	6	.000

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	38.850	6	.000
	Block	38.850	6	.000
	Model	38.850	6	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	317.301	.137	.185

Classification Table(a)					
			Predicted		
			WS		Percentage Correct
	Observed		.00	1.00	
Step 1	WS	.00	132	23	85.2
		1.00	55	53	49.1
	Overall Percentage				70.3
a The cut value is .500					

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	HUSBINC	-.045	.021	4.857	1	.028	.956
	CHILPRES	-1.604	.302	28.245	1	.000	.201
	RGN2	.342	.585	.342	1	.559	1.408
	RGN3	.188	.468	.161	1	.688	1.207
	RGN4	.472	.557	.718	1	.397	1.603
	RGN5	-.173	.500	.120	1	.729	.841
	Constant	1.268	.553	5.256	1	.022	3.553
a Variable(s) entered on step 1: HUSBINC, CHILPRES, RGN2, RGN3, RGN4, RGN5.							

model 3 with C, I, K, I*K:

```
LOGISTIC REGRESSION VAR=ws
 /METHOD=ENTER husbinc chilpres ik.
```

Case Processing Summary			
Unweighted Cases(a)		N	Percent
Selected Cases	Included in Analysis	263	100.0
	Missing Cases	0	.0
	Total	263	100.0
Unselected Cases		0	.0
Total		263	100.0
a If weight is in effect, see classification table for the total number of cases.			

Dependent Variable Encoding	
Original Value	Internal Value
.00	0
1.00	1

Classification Table(a,b)					
			Predicted		
			WS		Percentage Correct
	Observed		.00	1.00	
Step 0	WS	.00	155	0	100.0
		1.00	108	0	.0
	Overall Percentage				58.9
a Constant is included in the model.					
b The cut value is .500					

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.361	.125	8.308	1	.004	.697

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	HUSBINC	4.928	1	.026
		CHILPRES	31.599	1	.000
		IK	25.164	1	.000
	Overall Statistics		36.471	3	.000

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	37.027	3	.000
	Block	37.027	3	.000
	Model	37.027	3	.000

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	319.124	.131	.177

Classification Table(a)					
			Predicted		
			WS		Percentage Correct
	Observed		.00	1.00	
Step 1	WS	.00	133	22	85.8
		1.00	59	49	45.4

	Overall Percentage			69.2
a The cut value is .500				

Variables in the Equation							
		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**
Step 1(a)	**HUSBINC**	-.062	.033	3.604	1	.058	.940
	CHILPRES	-2.046	.677	9.134	1	.003	.129
	IK	.032	.041	.605	1	.437	1.032
	Constant	1.640	.558	8.646	1	.003	5.153
a Variable(s) entered on step 1: HUSBINC, CHILPRES, IK.							

model 4 with C, I, R:

```
LOGISTIC REGRESSION VAR=ws
 /METHOD=ENTER husbinc rgn2 rgn3 rgn4 rgn5.
```

Case Processing Summary			
Unweighted Cases(a)		**N**	**Percent**
Selected Cases	**Included in Analysis**	263	100.0
	Missing Cases	0	.0
	Total	263	100.0
Unselected Cases		0	.0
Total		263	100.0
a If weight is in effect, see classification table for the total number of cases.			

Dependent Variable Encoding	
Original Value	**Internal Value**
.00	0
1.00	1

Classification Table(a,b)					
			Predicted		
			WS		**Percentage Correct**
	Observed		**.00**	**1.00**	
Step 0	**WS**	**.00**	155	0	100.0
		1.00	108	0	.0
	Overall Percentage				58.9
a Constant is included in the model.					
b The cut value is .500					

Variables in the Equation						
	B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**

Step 0	**Constant**	-.361	.125	8.308	1	.004	.697

Variables not in the Equation					
			Score	**df**	**Sig.**
Step 0	**Variables**	**HUSBINC**	4.928	1	.026
		RGN2	1.530	1	.216
		RGN3	.008	1	.929
		RGN4	.244	1	.622
		RGN5	.242	1	.623
	Overall Statistics		8.011	5	.156

Omnibus Tests of Model Coefficients				
		Chi-square	**df**	**Sig.**
Step 1	**Step**	8.302	5	.140
	Block	8.302	5	.140
	Model	8.302	5	.140

Model Summary			
Step	**-2 Log likelihood**	**Cox & Snell R Square**	**Nagelkerke R Square**
1	347.849	.031	.042

Classification Table(a)					
			Predicted		
			WS		**Percentage Correct**
	Observed		**.00**	**1.00**	
Step 1	**WS**	**.00**	141	14	91.0
		1.00	87	21	19.4
	Overall Percentage				61.6
a The cut value is .500					

Variables in the Equation							
		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**
Step 1(a)	**HUSBINC**	-.045	.019	5.435	1	.020	.956
	RGN2	.858	.545	2.476	1	.116	2.359
	RGN3	.458	.444	1.060	1	.303	1.580
	RGN4	.466	.535	.760	1	.383	1.594
	RGN5	.204	.469	.190	1	.663	1.227
	Constant	-.093	.463	.040	1	.841	.911

a Variable(s) entered on step 1: HUSBINC, RGN2, RGN3, RGN4, RGN5.

model 5: with C, K, R:

```
LOGISTIC REGRESSION VAR=ws
 /METHOD=ENTER chilpres rgn2 rgn3 rgn4 rgn5.
```

Case Processing Summary			
Unweighted Cases(a)		**N**	**Percent**
Selected Cases	**Included in Analysis**	263	100.0
	Missing Cases	0	.0
	Total	263	100.0
Unselected Cases		0	.0
Total		263	100.0
a If weight is in effect, see classification table for the total number of cases.			

Dependent Variable Encoding	
Original Value	**Internal Value**
.00	0
1.00	1

Classification Table(a,b)					
			Predicted		
			WS		**Percentage Correct**
	Observed		**.00**	**1.00**	
Step 0	**WS**	**.00**	155	0	100.0
		1.00	108	0	.0
	Overall Percentage				58.9
a Constant is included in the model.					
b The cut value is .500					

Variables in the Equation							
		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**
Step 0	**Constant**	-.361	.125	8.308	1	.004	.697

Variables not in the Equation					
			Score	**df**	**Sig.**
Step 0	**Variables**	**CHILPRES**	31.599	1	.000
		RGN2	1.530	1	.216
		RGN3	.008	1	.929
		RGN4	.244	1	.622

		RGN5	.242	1	.623
	Overall Statistics		33.493	5	.000

Omnibus Tests of Model Coefficients				
		Chi-square	**df**	**Sig.**
Step 1	**Step**	33.724	5	.000
	Block	33.724	5	.000
	Model	33.724	5	.000

Model Summary			
Step	**-2 Log likelihood**	**Cox & Snell R Square**	**Nagelkerke R Square**
1	322.427	.120	.162

Classification Table(a)					
			Predicted		
			WS		**Percentage Correct**
	Observed		**.00**	**1.00**	
Step 1	**WS**	**.00**	129	26	83.2
		1.00	55	53	49.1
	Overall Percentage				69.2
a The cut value is .500					

Variables in the Equation							
		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**
Step 1(a)	**CHILPRES**	-1.603	.298	28.905	1	.000	.201
	RGN2	.241	.576	.174	1	.676	1.272
	RGN3	.042	.457	.008	1	.927	1.043
	RGN4	.492	.550	.798	1	.372	1.635
	RGN5	-.156	.493	.100	1	.752	.856
	Constant	.672	.476	1.988	1	.159	1.958
a Variable(s) entered on step 1: CHILPRES, RGN2, RGN3, RGN4, RGN5.							

page 452 Table 15.2 Analysis of deviance table for terms in the logit model fit to the women's labor force participation data.

NOTE: To get the G**2 terms, subtract the deviances.
Model 0 versus model 1: 356.16 - 316.54 = 39.62.
Model 2 versus model 1: 317.30 - 316.54 = .76.
Model 5 versus model 2: 322.44 - 317.30 = 5.14.
Model 4 versus model 2: 347.86 - 317.30 = 30.56.
Model 3 versus model 1: 319.12 - 316.54 = 2.58.

page 453 Figure 15.4 Fitted probability of young married women working outside the home, as a function of husband's income and presence of children. The solid line

shows the logit model fit by maximum likelihood; the broken line shows the linear least-squares fit.

NOTE: The four lines in Figure 15.4 have been done in separate graphs.

```
logistic regression var = ws
 /method=enter chilpres husbinc
 /save pre.
```

Case Processing Summary			
Unweighted Cases(a)		**N**	**Percent**
Selected Cases	**Included in Analysis**	263	100.0
	Missing Cases	0	.0
	Total	263	100.0
Unselected Cases		0	.0
Total		263	100.0
a If weight is in effect, see classification table for the total number of cases.			

Dependent Variable Encoding	
Original Value	**Internal Value**
.00	0
1.00	1

Classification Table(a,b)					
			Predicted		
			WS		**Percentage Correct**
	Observed		**.00**	**1.00**	
Step 0	**WS**	**.00**	155	0	100.0
		1.00	108	0	.0
	Overall Percentage				58.9
a Constant is included in the model.					
b The cut value is .500					

Variables in the Equation							
		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**
Step 0	**Constant**	-.361	.125	8.308	1	.004	.697

Variables not in the Equation					
			Score	**df**	**Sig.**
Step 0	**Variables**	**CHILPRES**	31.599	1	.000
		HUSBINC	4.928	1	.026
	Overall Statistics		35.714	2	.000

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	36.418	2	.000
	Block	36.418	2	.000
	Model	36.418	2	.000

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	319.733	.129	.174

Classification Table(a)					
			Predicted		
			WS		Percentage Correct
	Observed		.00	1.00	
Step 1	WS	.00	132	23	85.2
		1.00	55	53	49.1
	Overall Percentage				70.3
a The cut value is .500					

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	CHILPRES	-1.576	.292	29.065	1	.000	.207
	HUSBINC	-.042	.020	4.575	1	.032	.959
	Constant	1.336	.384	12.116	1	.000	3.803
a Variable(s) entered on step 1: CHILPRES, HUSBINC.							

```
regression
 /dep = ws
 /method=enter chilpres husbinc
 /save pre.
```

Variables Entered/Removed(b)			
Model	Variables Entered	Variables Removed	Method
1	Husband's income, $1000, Children present(a)	.	Enter
a All requested variables entered.			
b Dependent Variable: WS			

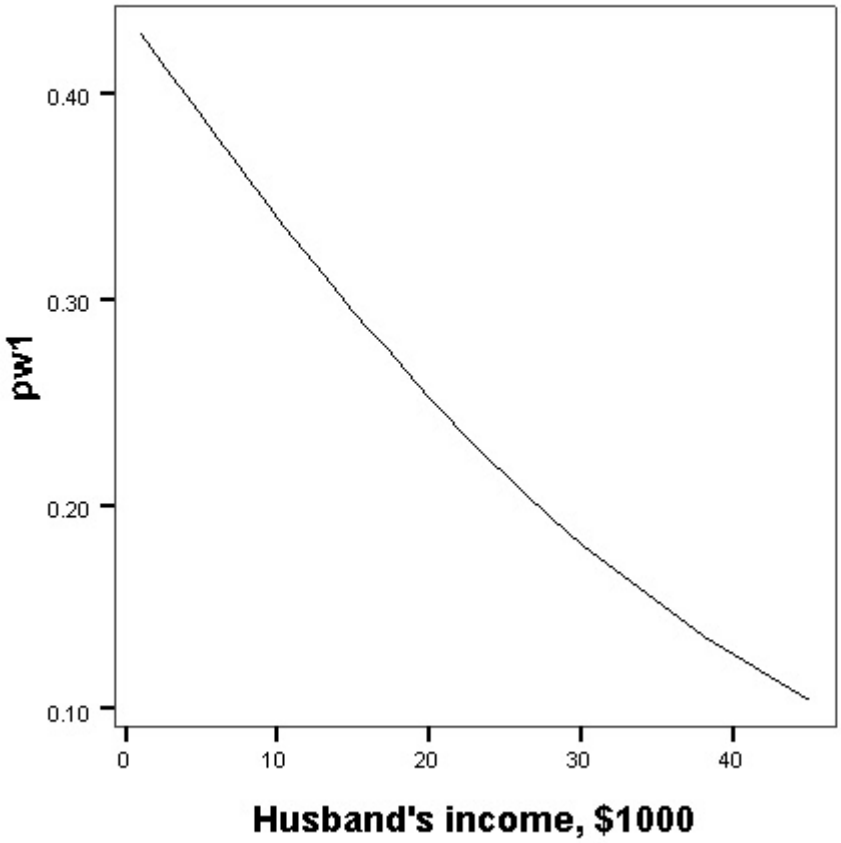
Model Summary(b)				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.369(a)	.136	.129	.45996
a Predictors: (Constant), Husband's income, $1000, Children present				
b Dependent Variable: WS				

ANOVA(b)						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.643	2	4.322	20.427	.000(a)
	Residual	55.007	260	.212		
	Total	63.650	262			
a Predictors: (Constant), Husband's income, $1000, Children present						
b Dependent Variable: WS						

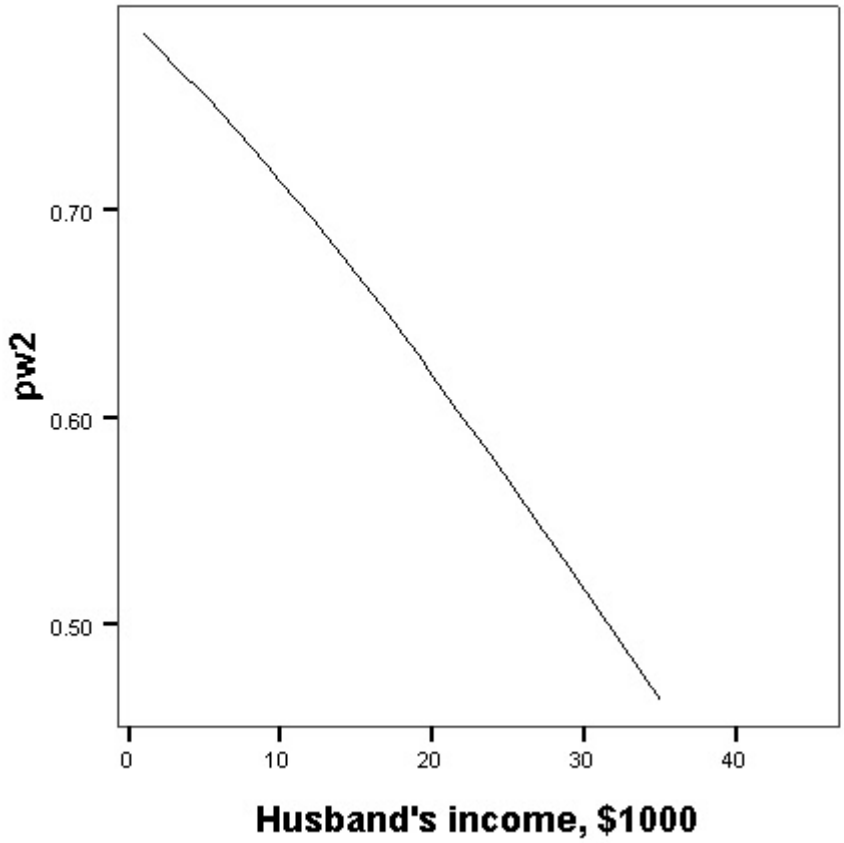
Coefficients(a)						
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
Model		B	Std. Error	Beta		
1	(Constant)	.794	.077		10.350	.000
	Children present	-.367	.062	-.342	-5.934	.000
	Husband's income, $1000	-8.538E-03	.004	-.125	-2.170	.031
a Dependent Variable: WS						

Residuals Statistics(a)					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.0421	.7851	.4106	.18163	263
Residual	-.7510	.8981	.0000	.45820	263
Std. Predicted Value	-2.029	2.062	.000	1.000	263
Std. Residual	-1.633	1.953	.000	.996	263
a Dependent Variable: WS					

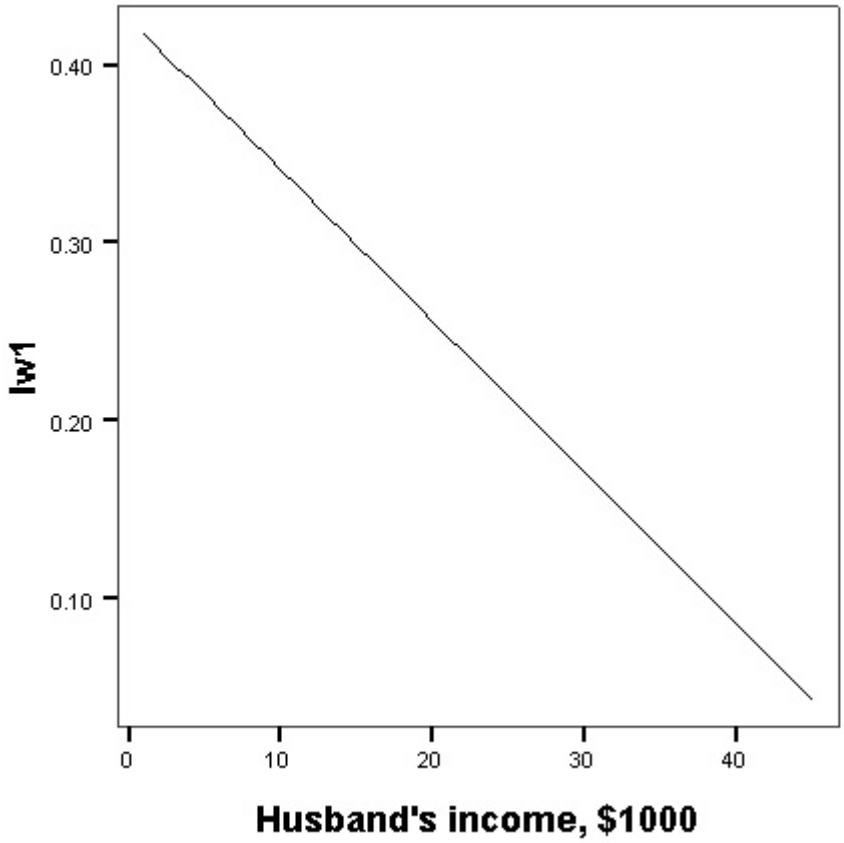
```
if chilpres = 1 pw1 = pre_1.
if chilpres = 0 pw2 = pre_1.
if chilpres = 1 lw1 = pre_2.
if chilpres = 0 lw2 = pre_2.
execute.

SORT CASES BY husbinc (A).

IGRAPH
 /X1 = VAR(husbinc)
 /Y = VAR(pw1)
 /LINE(MEAN) STYLE = LINE INTERPOLATE = STRAIGHT.
```



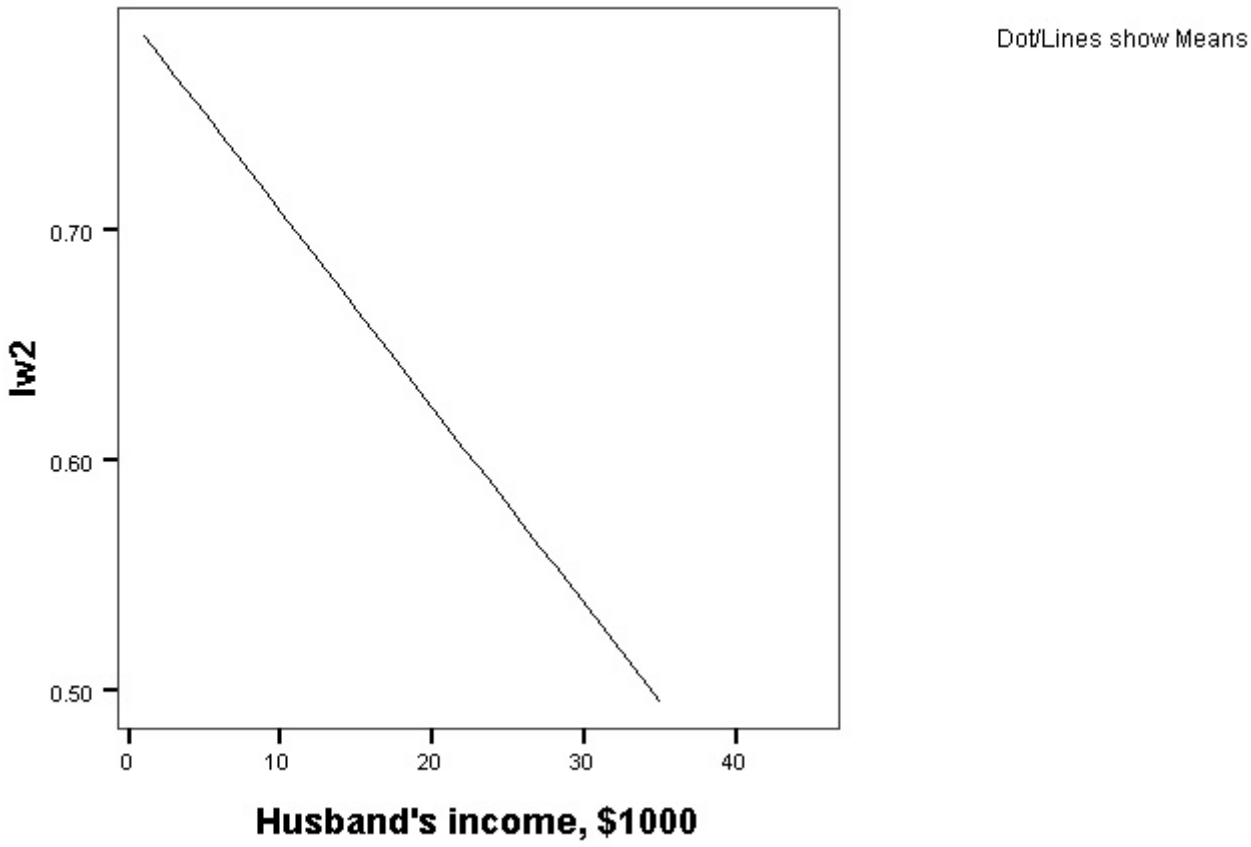

```
IGRAPH
 /X1 = VAR(husbinc)
 /Y = VAR(pw2)
 /LINE(MEAN) STYLE = LINE INTERPOLATE = STRAIGHT.
```




```
IGRAPH
 /X1 = VAR(husbinc)
 /Y = VAR(lw1)
 /LINE(MEAN) STYLE = LINE INTERPOLATE = STRAIGHT.
```




```
IGRAPH
 /X1 = VAR(husbinc)
 /Y = VAR(lw2)
 /LINE(MEAN) STYLE = LINE INTERPOLATE = STRAIGHT.
```



page 459 Figure 15.5 Partial-residual plot for husband's income in the women's labor force participation data. The broken line gives the logit fit; the solid line shows a lowess smooth of the plot. Note the four bands due to the four combinations of values of the dichotomous dependent variable and the dichotomous independent variable presence of children. Because husband's income is also discrete, many points are overplotted.

NOTE: SPSS does not do lowess smoothing in IGRAPH, so that line is not done. The other two are done on separate graphs.

NOTE: Leverage, studentized residuals and dfbetas are being saved here so that this regression only has to be run once.

```
logistic regression var=ws
 /method=enter chilpres husbinc
 /save pre lev sre dfbeta.
```

Case Processing Summary

Unweighted Cases(a)		N	Percent
Selected Cases	Included in Analysis	263	100.0
	Missing Cases	0	.0
	Total	263	100.0
Unselected Cases		0	.0

Total	263	100.0
a If weight is in effect, see classification table for the total number of cases.		

Dependent Variable Encoding	
Original Value	**Internal Value**
.00	0
1.00	1

Classification Table(a,b)					
			Predicted		
			WS		Percentage Correct
	Observed		.00	1.00	
Step 0	WS	.00	155	0	100.0
		1.00	108	0	.0
	Overall Percentage				58.9
a Constant is included in the model.					
b The cut value is .500					

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.361	.125	8.308	1	.004	.697

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	CHILPRES	31.599	1	.000
		HUSBINC	4.928	1	.026
	Overall Statistics		35.714	2	.000

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	36.418	2	.000
	Block	36.418	2	.000
	Model	36.418	2	.000

Model Summary			
Step	**-2 Log likelihood**	**Cox & Snell R Square**	**Nagelkerke R Square**
1	319.733	.129	.174

Classification Table(a)					
			Predicted		
			WS		Percentage Correct
	Observed		.00	1.00	
Step 1	WS	.00	132	23	85.2
		1.00	55	53	49.1
	Overall Percentage				70.3
a The cut value is .500					

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	CHILPRES	-1.576	.292	29.065	1	.000	.207
	HUSBINC	-.042	.020	4.575	1	.032	.959
	Constant	1.336	.384	12.116	1	.000	3.803
a Variable(s) entered on step 1: CHILPRES, HUSBINC.							

NOTE: **pre_3** is generated here.

```
compute par = (ws-pre_3)/(pre_3*(1-pre_3)) - .0423*husbinc.
regression
 /dep=par
 /method=enter husbinc
 /save pre.
```

Variables Entered/Removed(b)			
Model	Variables Entered	Variables Removed	Method
1	Husband's income, $1000(a)	.	Enter
a All requested variables entered.			
b Dependent Variable: PAR			

Model Summary(b)				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.100(a)	.010	.006	2.25325
a Predictors: (Constant), Husband's income, $1000				
b Dependent Variable: PAR				

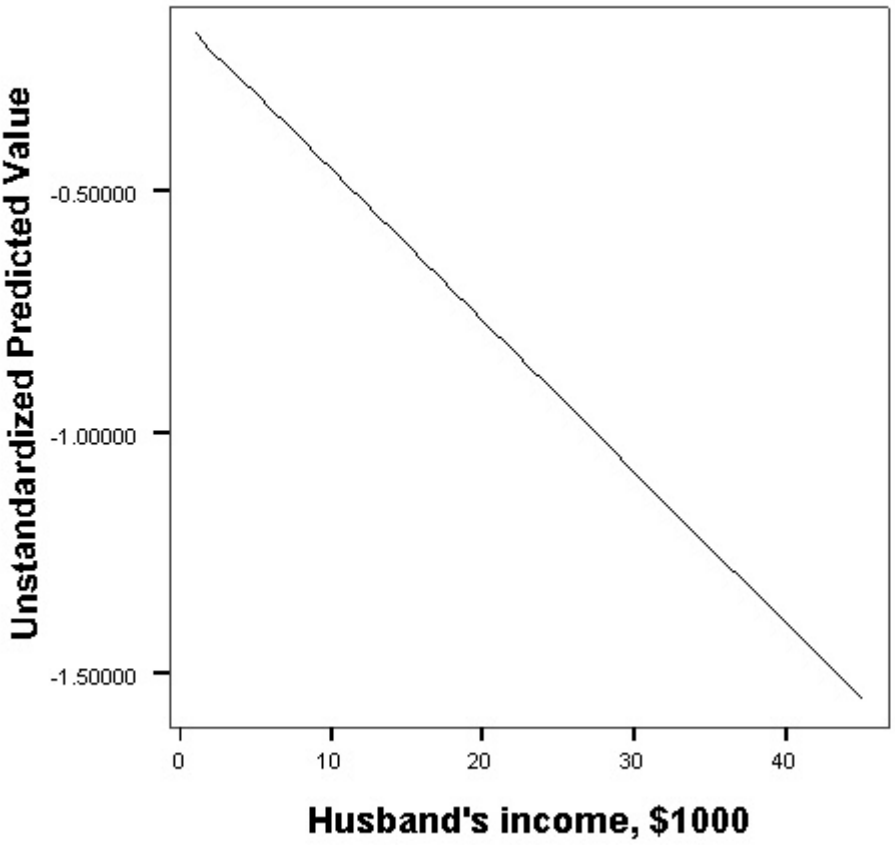
ANOVA(b)						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.494	1	13.494	2.658	.104(a)
	Residual	1325.132	261	5.077		
	Total	1338.626	262			
a Predictors: (Constant), Husband's income, $1000						
b Dependent Variable: PAR						

Coefficients(a)						
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
Model		B	Std. Error	Beta		
1	(Constant)	-.140	.316		-.443	.658
	Husband's income, $1000	-3.141E-02	.019	-.100	-1.630	.104
a Dependent Variable: PAR						

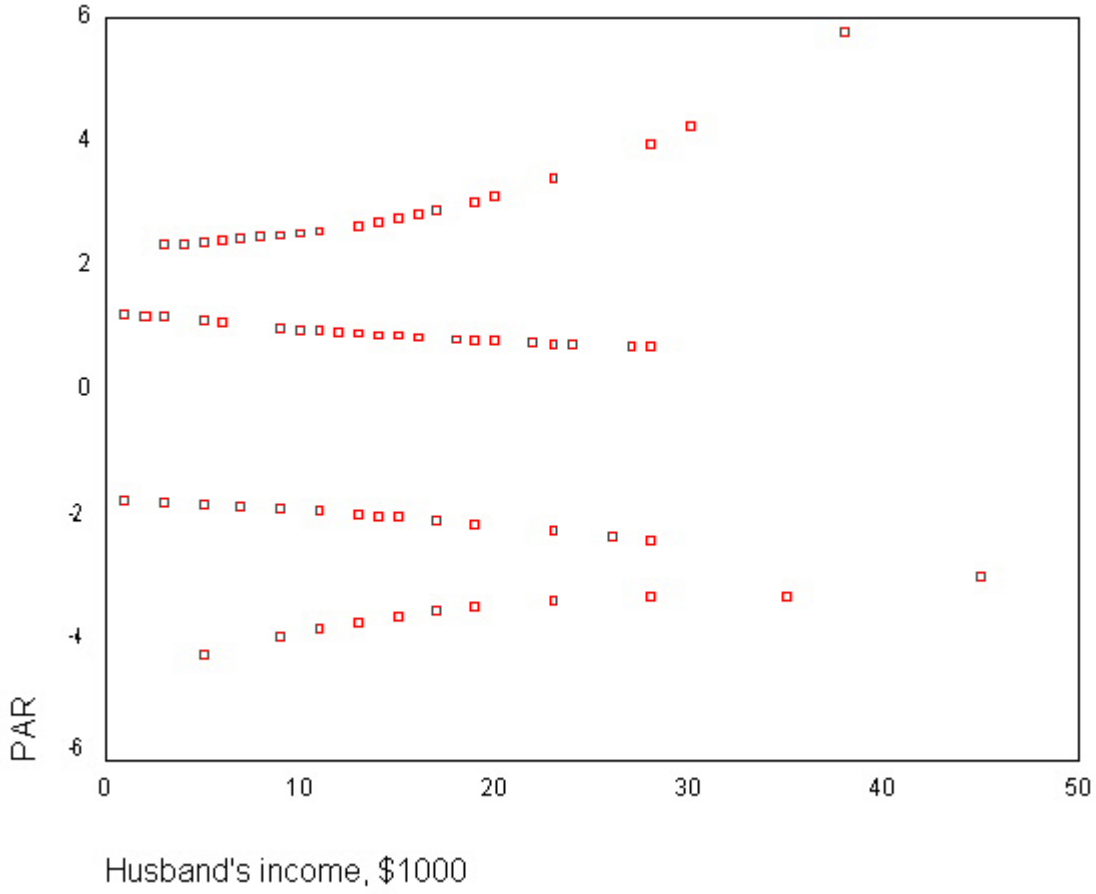
Casewise Diagnostics(a)		
Case Number	Std. Residual	PAR
260	3.138	5.74
261	3.138	5.74
a Dependent Variable: PAR		

Residuals Statistics(a)					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-1.5536	-.1717	-.6037	.22694	263
Residual	-3.9922	7.0705	.0000	2.24895	263
Std. Predicted Value	-4.186	1.904	.000	1.000	263
Std. Residual	-1.772	3.138	.000	.998	263
a Dependent Variable: PAR					

```
IGRAPH
 /X1 = VAR(husbinc)
 /Y = VAR(pre_4)
 /LINE(MEAN) STYLE = LINE INTERPOLATE = STRAIGHT.
```




```
GRAPH
  /SCATTERPLOT(BIVAR)=husbinc WITH par.
```



page 461 Figure 15.6 Plot of studentized residuals versus hat values for the logit model fit to the women's labor force participation data. Vertical lines are drawn at twice and three times the average hat value. Many points are overplotted.

```
logistic regression var=ws
 /method=enter chilpres husbinc
 /save lev sre dfbeta.
```

Case Processing Summary			
Unweighted Cases(a)		**N**	**Percent**
Selected Cases	**Included in Analysis**	263	100.0
	Missing Cases	0	.0
	Total	263	100.0
Unselected Cases		0	.0
Total		263	100.0
a If weight is in effect, see classification table for the total number of cases.			

Dependent Variable Encoding	
Original Value	**Internal Value**
.00	0
1.00	1

Classification Table(a,b)					
			Predicted		
			WS		Percentage Correct
	Observed		.00	1.00	
Step 0	WS	.00	155	0	100.0
		1.00	108	0	.0
	Overall Percentage				58.9
a Constant is included in the model.					
b The cut value is .500					

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.361	.125	8.308	1	.004	.697

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	CHILPRES	31.599	1	.000
		HUSBINC	4.928	1	.026
	Overall Statistics		35.714	2	.000

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	36.418	2	.000
	Block	36.418	2	.000
	Model	36.418	2	.000

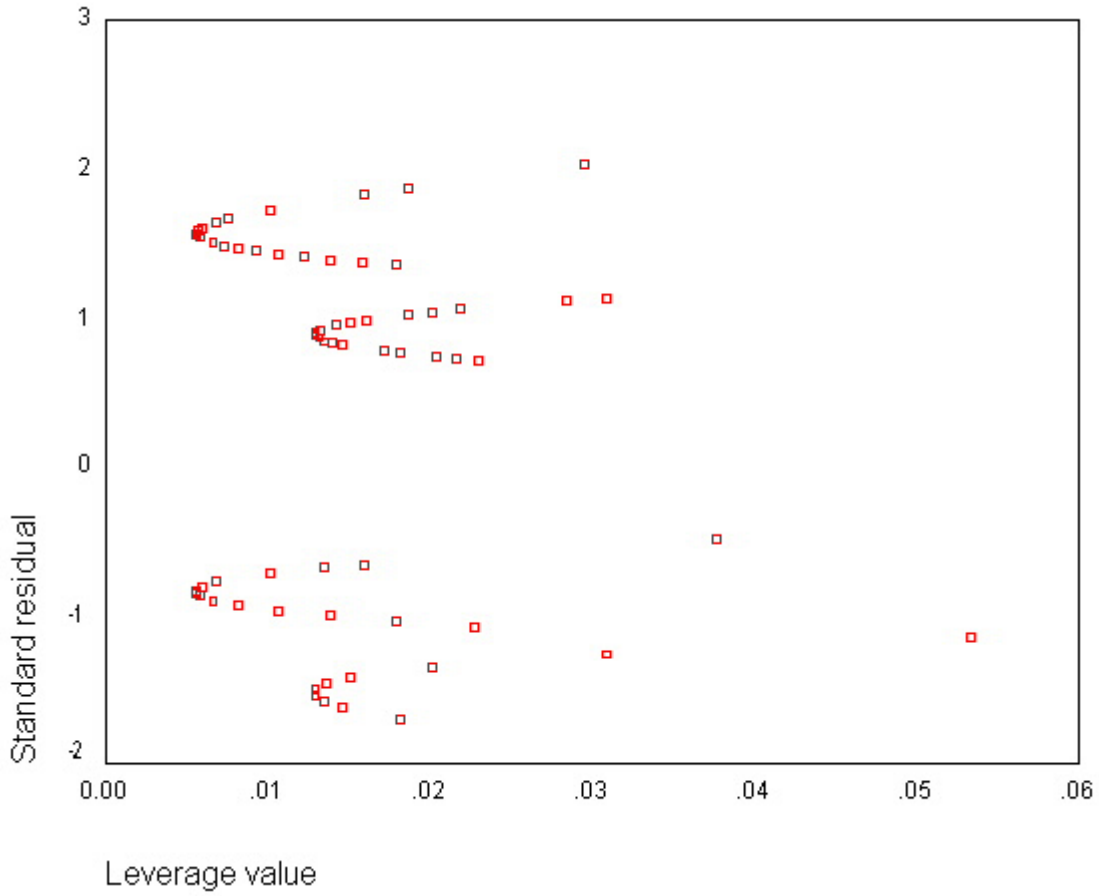
Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	319.733	.129	.174

Classification Table(a)					
			Predicted		
			WS		Percentage Correct
	Observed		.00	1.00	
Step 1	WS	.00	132	23	85.2
		1.00	55	53	49.1
	Overall Percentage				70.3
a The cut value is .500					

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	CHILPRES	-1.576	.292	29.065	1	.000	.207
	HUSBINC	-.042	.020	4.575	1	.032	.959
	Constant	1.336	.384	12.116	1	.000	3.803

a Variable(s) entered on step 1: CHILPRES, HUSBINC.

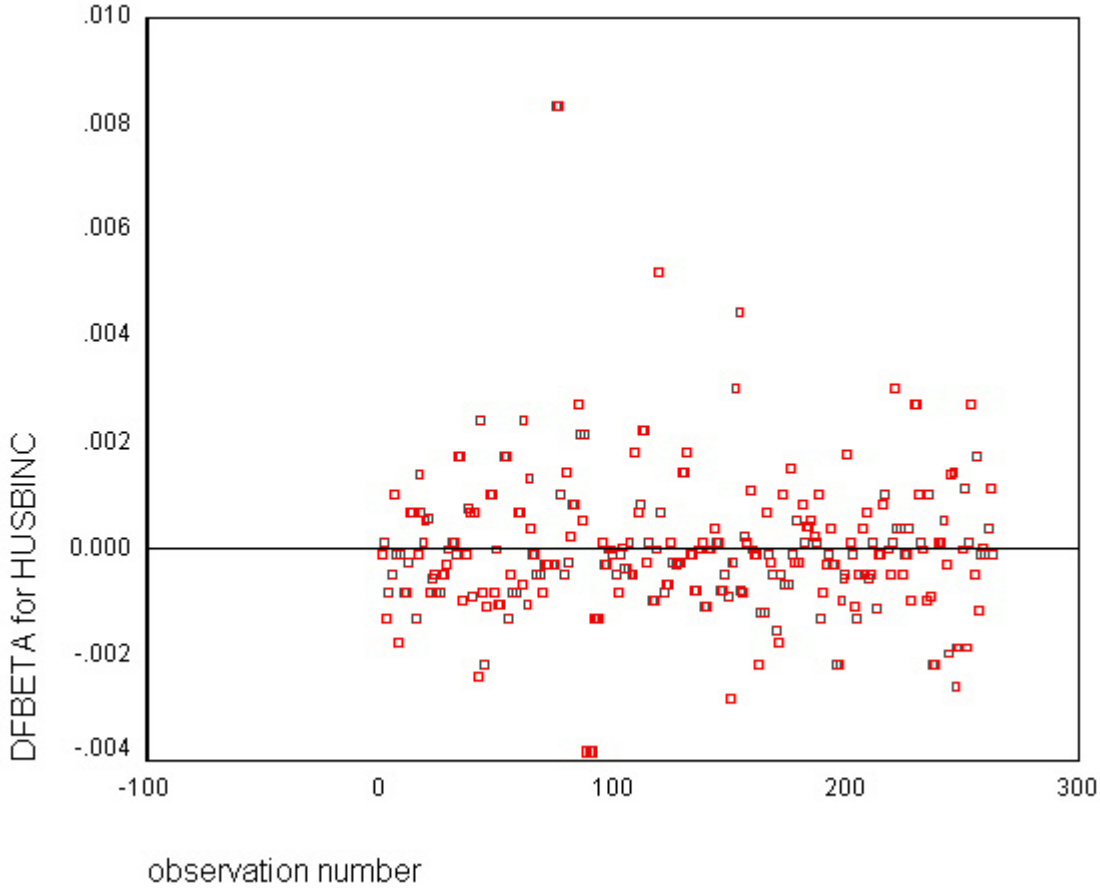
```
compute pr = (ws - pre_3)/sqrt(pre_3*(1 - pre_3)).

GRAPH
  /SCATTERPLOT(BIVAR)=lev_1 WITH sre_1.
```



page 462 Figure 15.7 Index plots of approximate influence of each observation on the coefficients of husband's income and presence of children.

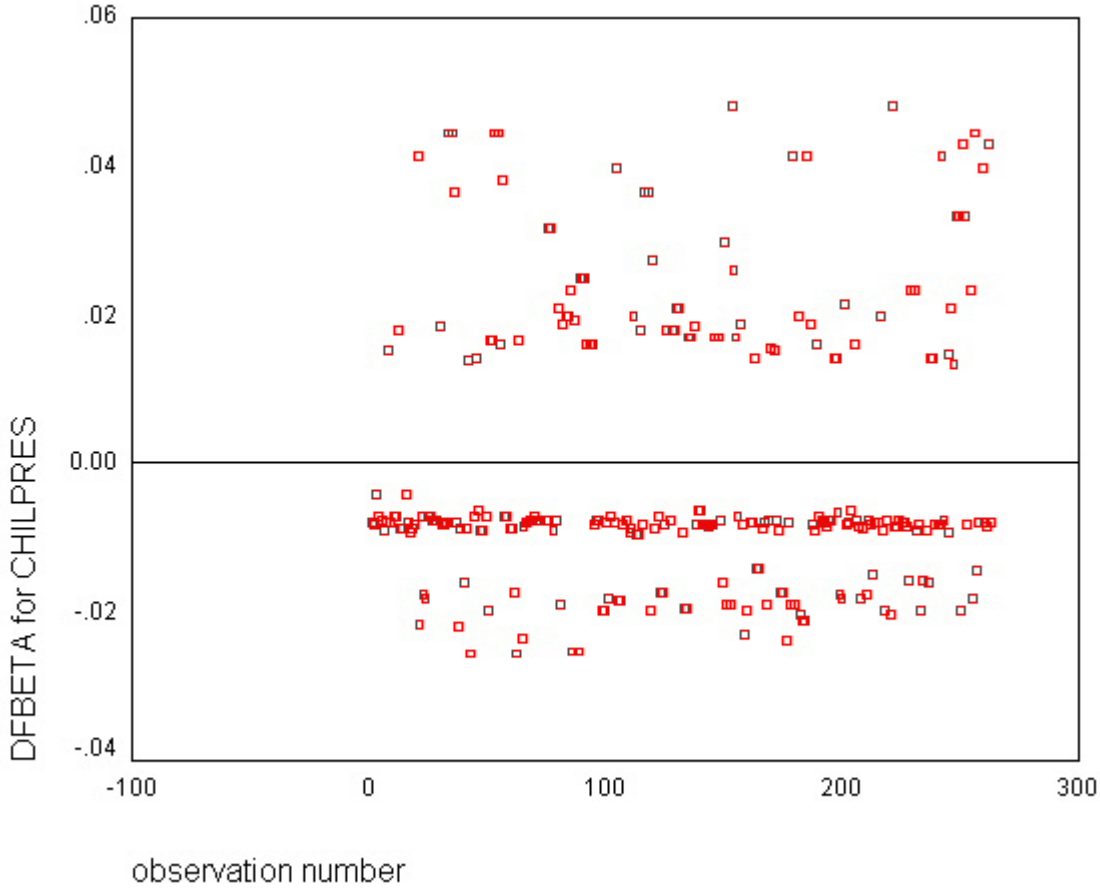
Panel (a)

```
GRAPH
  /SCATTERPLOT(BIVAR)=obs WITH dfb2_1.
```



Panel (b)

```
GRAPH
  /SCATTERPLOT(BIVAR)=obs WITH dfb1_1.
```



page 469 Figure 15.8 Fitted probabilities for the polytomous logit model, showing women's labor force participation as a function of husband's income and presence of children. The upper panel is for children present, the lower panel for children absent.

NOTE: The scaling of the x-axis is very different than in the text.

Panel (a)

```
GET FILE='D:\womenlf.sav'.
compute w0 = 0.
if workstat = 0 w0 = 1.
compute w1 = 0.
if workstat = 1 w1 = 1.
compute w2 = 0.
if workstat = 2 w2 = 1.
execute.

logistic regression var=w0
 /method=enter husbinc chilpres
 /save pre.
```

Case Processing Summary

Unweighted Cases(a)		N	Percent
Selected Cases	Included in Analysis	263	100.0
	Missing Cases	0	.0
	Total	263	100.0

Unselected Cases	0	.0
Total	263	100.0
a If weight is in effect, see classification table for the total number of cases.		

Dependent Variable Encoding	
Original Value	**Internal Value**
.00	0
1.00	1

Classification Table(a,b)

			Predicted		
			W0		Percentage Correct
	Observed		.00	1.00	
Step 0	W0	.00	0	108	.0
		1.00	0	155	100.0
	Overall Percentage				58.9

a Constant is included in the model.

b The cut value is .500

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.361	.125	8.308	1	.004	1.435

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	HUSBINC	4.928	1	.026
		CHILPRES	31.599	1	.000
	Overall Statistics		35.714	2	.000

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	36.418	2	.000
	Block	36.418	2	.000
	Model	36.418	2	.000

Model Summary			
Step	**-2 Log likelihood**	**Cox & Snell R Square**	**Nagelkerke R Square**
1	319.733	.129	.174

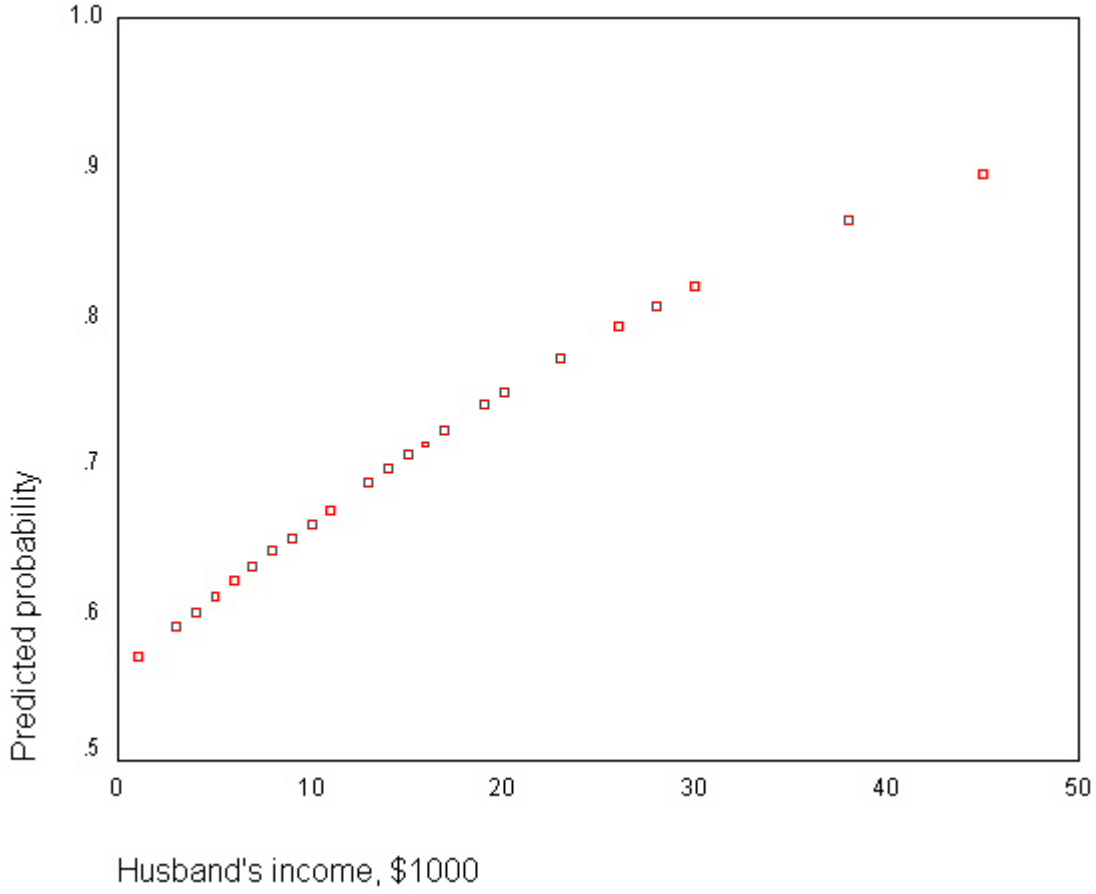
Classification Table(a)					
			Predicted		
			W0		Percentage Correct
	Observed		.00	1.00	
Step 1	W0	.00	53	55	49.1
		1.00	23	132	85.2
	Overall Percentage				70.3
a The cut value is .500					

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	HUSBINC	.042	.020	4.575	1	.032	1.043
	CHILPRES	1.576	.292	29.065	1	.000	4.834
	Constant	-1.336	.384	12.116	1	.000	.263
a Variable(s) entered on step 1: HUSBINC, CHILPRES.							

```
USE ALL.
COMPUTE filter_$=(chilpres=1).
VARIABLE LABEL filter_$ 'chilpres=1 (FILTER)'.
VALUE LABELS filter_$  0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.
```

Children present / not working.

```
graph
 /scatterplot(bivar) = husbinc with pre_1.
```



Children present / part-time.

```
logistic regression var=w1
 /method=enter husbinc chilpres
 /save pre.
```

Case Processing Summary

Unweighted Cases(b)		N	Percent
Selected Cases(a)	Included in Analysis	184	100.0
	Missing Cases	0	.0
	Total	184	100.0
Unselected Cases		0	.0
Total		184	100.0

a The variable Children present is constant for all selected cases. Since a constant was requested in the model, it will be removed from the analysis.

b If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
.00	0
1.00	1

Classification Table(a,b)					
			Predicted		
			W1		Percentage Correct
	Observed		.00	1.00	
Step 0	W1	.00	149	0	100.0
		1.00	35	0	.0
	Overall Percentage				81.0
a Constant is included in the model.					
b The cut value is .500					

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-1.449	.188	59.473	1	.000	.235

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	HUSBINC	.757	1	.384
	Overall Statistics		.757	1	.384

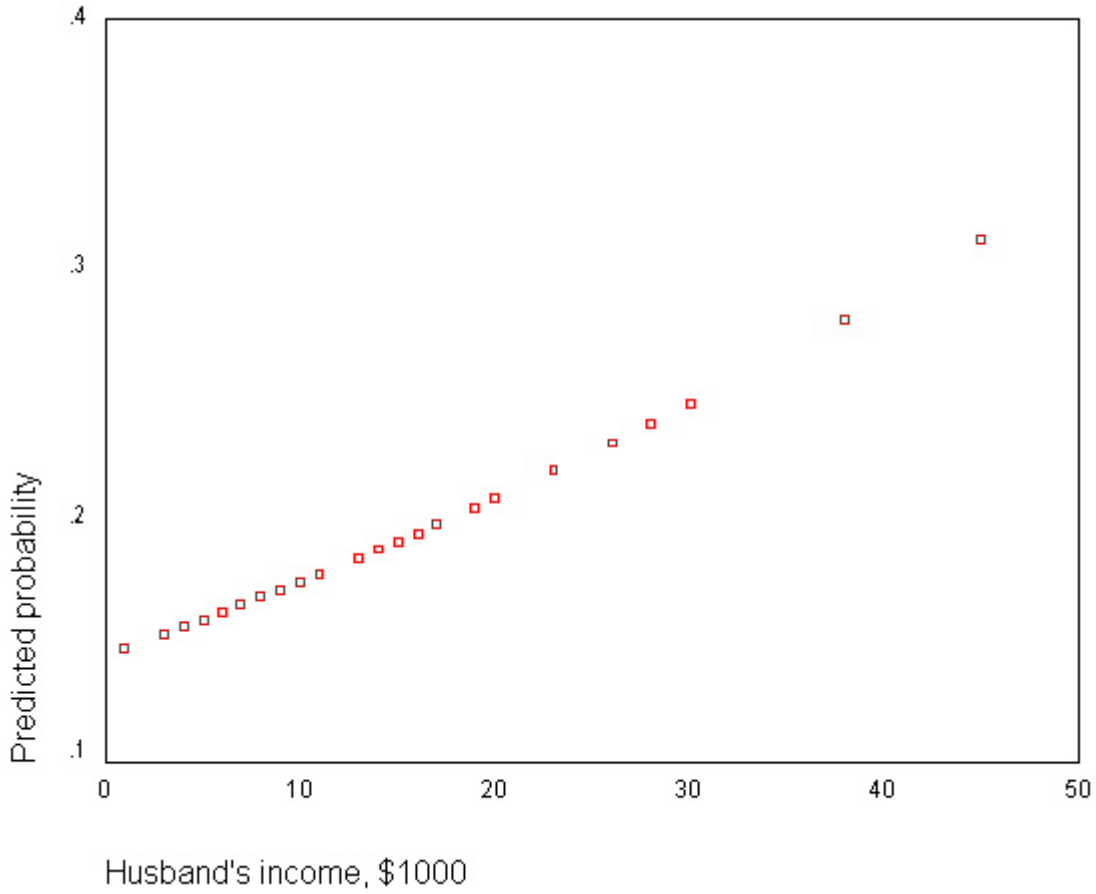
Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	.732	1	.392
	Block	.732	1	.392
	Model	.732	1	.392

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	178.314	.004	.006

Classification Table(a)					
			Predicted		
			W1		Percentage Correct
	Observed		.00	1.00	
Step 1	W1	.00	149	0	100.0
		1.00	35	0	.0
	Overall Percentage				81.0
a The cut value is .500					

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	HUSBINC	.022	.025	.751	1	.386	1.022
	Constant	-1.783	.437	16.626	1	.000	.168
a Variable(s) entered on step 1: HUSBINC.							

```
graph
 /scatterplot(bivar) = husbinc with pre_2.
```



Children present / full-time.

```
logistic regression var=w2
 /method=enter husbinc chilpres
 /save pre.
```

Case Processing Summary			
Unweighted Cases(b)		N	Percent
Selected Cases(a)	Included in Analysis	184	100.0
	Missing Cases	0	.0
	Total	184	100.0
Unselected Cases		0	.0
Total		184	100.0
a The variable Children present is constant for all selected cases. Since a constant was requested in the model, it will be removed from the analysis.			

b If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding	
Original Value	**Internal Value**
.00	0
1.00	1

Classification Table(a,b)					
			Predicted		
			W2		Percentage Correct
	Observed		.00	1.00	
Step 0	W2	.00	164	0	100.0
		1.00	20	0	.0
	Overall Percentage				89.1
a Constant is included in the model.					
b The cut value is .500					

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-2.104	.237	78.923	1	.000	.122

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	HUSBINC	8.720	1	.003
	Overall Statistics		8.720	1	.003

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	11.063	1	.001
	Block	11.063	1	.001
	Model	11.063	1	.001

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	115.448	.058	.117

Classification Table(a)	
	Predicted

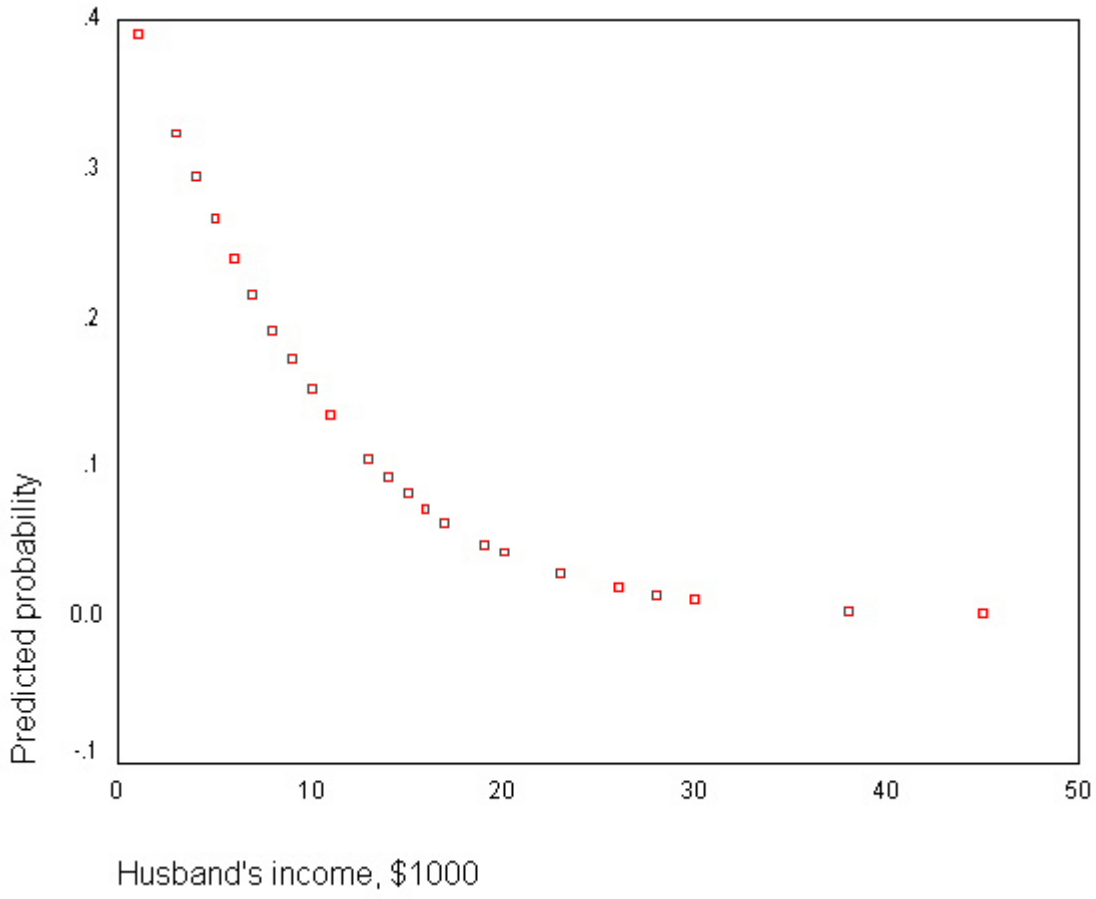
			W2		Percentage Correct
	Observed		.00	1.00	
Step 1	W2	.00	164	0	100.0
		1.00	20	0	.0
	Overall Percentage				89.1

a The cut value is .500

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	HUSBINC	-.141	.047	9.019	1	.003	.869
	Constant	-.309	.573	.290	1	.590	.734

a Variable(s) entered on step 1: HUSBINC.

```
graph
 /scatterplot(bivar) = husbinc with pre_3.
```



Panel (b)

```
GET FILE='D:\womenlf.sav'.
compute w0 = 0.
if workstat = 0 w0 = 1.
compute w1 = 0.
if workstat = 1 w1 = 1.
```

```
compute w2 = 0.
if workstat = 2 w2 = 1.
execute.

logistic regression var=w0
 /method=enter husbinc chilpres
 /save pre.
```

Case Processing Summary			
Unweighted Cases(a)		N	Percent
Selected Cases	Included in Analysis	263	100.0
	Missing Cases	0	.0
	Total	263	100.0
Unselected Cases		0	.0
Total		263	100.0

a If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding	
Original Value	Internal Value
.00	0
1.00	1

Classification Table(a,b)					
			Predicted		
			W0		Percentage Correct
	Observed		.00	1.00	
Step 0	W0	.00	0	108	.0
		1.00	0	155	100.0
	Overall Percentage				58.9

a Constant is included in the model.

b The cut value is .500

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.361	.125	8.308	1	.004	1.435

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	HUSBINC	4.928	1	.026
		CHILPRES	31.599	1	.000
	Overall Statistics		35.714	2	.000

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	36.418	2	.000
	Block	36.418	2	.000
	Model	36.418	2	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	319.733	.129	.174

Classification Table(a)

			Predicted		
			W0		Percentage Correct
	Observed		.00	1.00	
Step 1	W0	.00	53	55	49.1
		1.00	23	132	85.2
	Overall Percentage				70.3

a The cut value is .500

Variables in the Equation

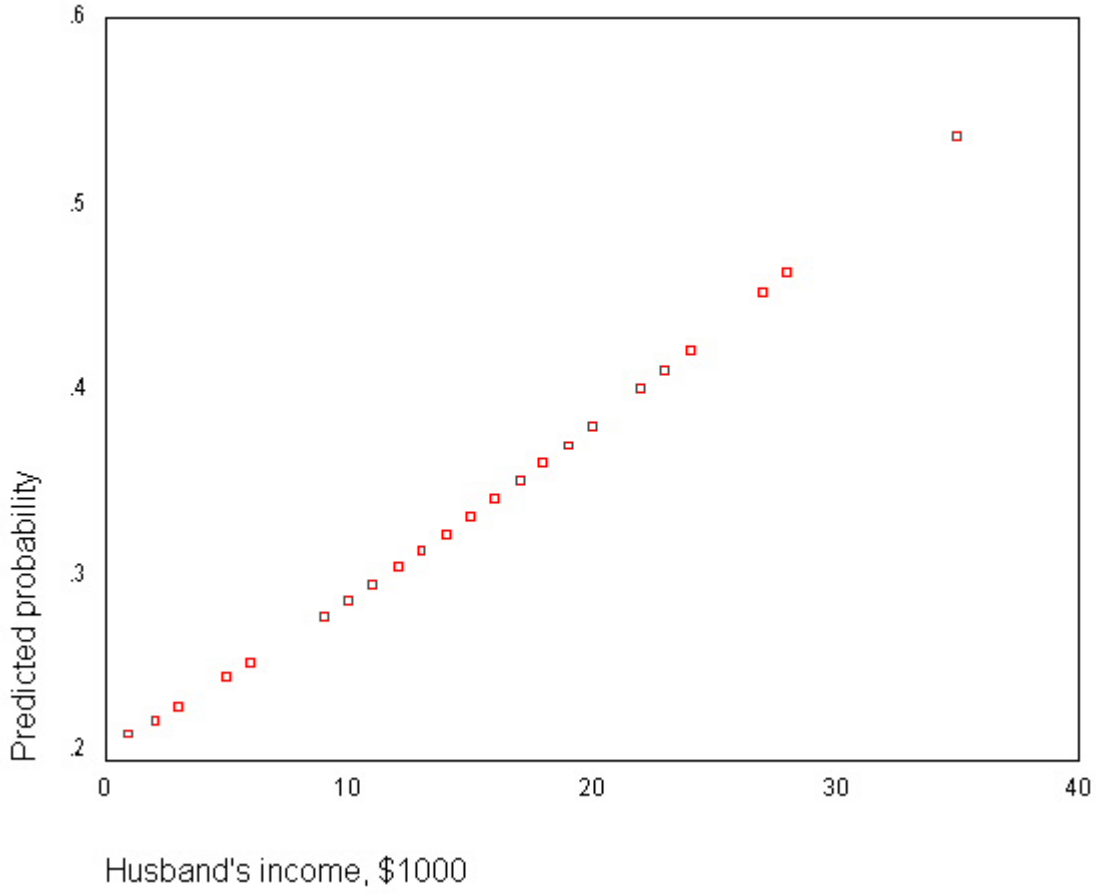
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	HUSBINC	.042	.020	4.575	1	.032	1.043
	CHILPRES	1.576	.292	29.065	1	.000	4.834
	Constant	-1.336	.384	12.116	1	.000	.263

a Variable(s) entered on step 1: HUSBINC, CHILPRES.

```
USE ALL.
COMPUTE filter_$=(chilpres=0).
VARIABLE LABEL filter_$ 'chilpres=1 (FILTER)'.
VALUE LABELS filter_$  0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.
```

Children absent / not working.

```
graph
 /scatterplot(bivar) = husbinc with pre_1.
```



Children absent / part-time.

```
logistic regression var=w1
 /method=enter husbinc chilpres
 /save pre.
```

Case Processing Summary			
Unweighted Cases(b)		**N**	**Percent**
Selected Cases(a)	**Included in Analysis**	79	100.0
	Missing Cases	0	.0
	Total	79	100.0
Unselected Cases		0	.0
Total		79	100.0

a The variable Children present is constant for all selected cases. Since a constant was requested in the model, it will be removed from the analysis.

b If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding	
Original Value	**Internal Value**
.00	0
1.00	1

Classification Table(a,b)					
			Predicted		
			W1		Percentage Correct
	Observed		.00	1.00	
Step 0	W1	.00	72	0	100.0
		1.00	7	0	.0
	Overall Percentage				91.1
a Constant is included in the model.					
b The cut value is .500					

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-2.331	.396	34.657	1	.000	.097

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	HUSBINC	.576	1	.448
	Overall Statistics		.576	1	.448

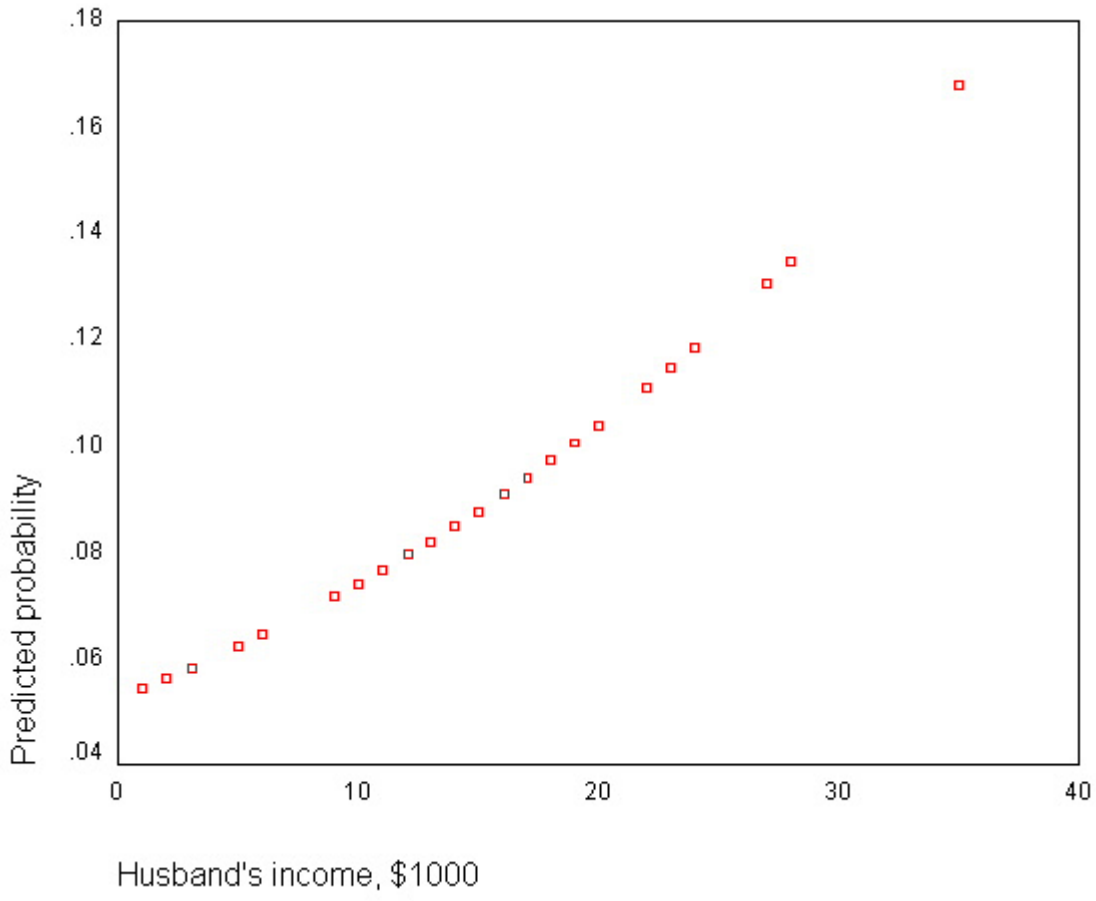
Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	.543	1	.461
	Block	.543	1	.461
	Model	.543	1	.461

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	46.747	.007	.015

Classification Table(a)					
			Predicted		
			W1		Percentage Correct
	Observed		.00	1.00	
Step 1	W1	.00	72	0	100.0
		1.00	7	0	.0
	Overall Percentage				91.1
a The cut value is .500					

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	HUSBINC	.037	.049	.568	1	.451	1.038
	Constant	-2.894	.886	10.661	1	.001	.055
a Variable(s) entered on step 1: HUSBINC.							

```
graph
 /scatterplot(bivar) = husbinc with pre_2.
```



Children absent / full-time.

```
logistic regression var=w2
 /method=enter husbinc chilpres
 /save pre.
```

Case Processing Summary			
Unweighted Cases(b)		N	Percent
Selected Cases(a)	Included in Analysis	79	100.0
	Missing Cases	0	.0
	Total	79	100.0
Unselected Cases		0	.0
Total		79	100.0
a The variable Children present is constant for all selected cases. Since a constant was requested in the model, it will be removed from the analysis.			
b If weight is in effect, see classification table for the total number of cases.			

Dependent Variable Encoding	
Original Value	**Internal Value**
.00	0
1.00	1

Classification Table(a,b)					
			Predicted		
			W2		Percentage Correct
	Observed		.00	1.00	
Step 0	W2	.00	0	33	.0
		1.00	0	46	100.0
	Overall Percentage				58.2
a Constant is included in the model.					
b The cut value is .500					

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.332	.228	2.120	1	.145	1.394

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	HUSBINC	5.299	1	.021
	Overall Statistics		5.299	1	.021

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	5.396	1	.020
	Block	5.396	1	.020
	Model	5.396	1	.020

Model Summary			
Step	**-2 Log likelihood**	**Cox & Snell R Square**	**Nagelkerke R Square**
1	101.973	.066	.089

Classification Table(a)		
	Predicted	
	W2	Percentage Correct

	Observed		.00	1.00	
Step 1	W2	.00	9	24	27.3
		1.00	6	40	87.0
	Overall Percentage				62.0

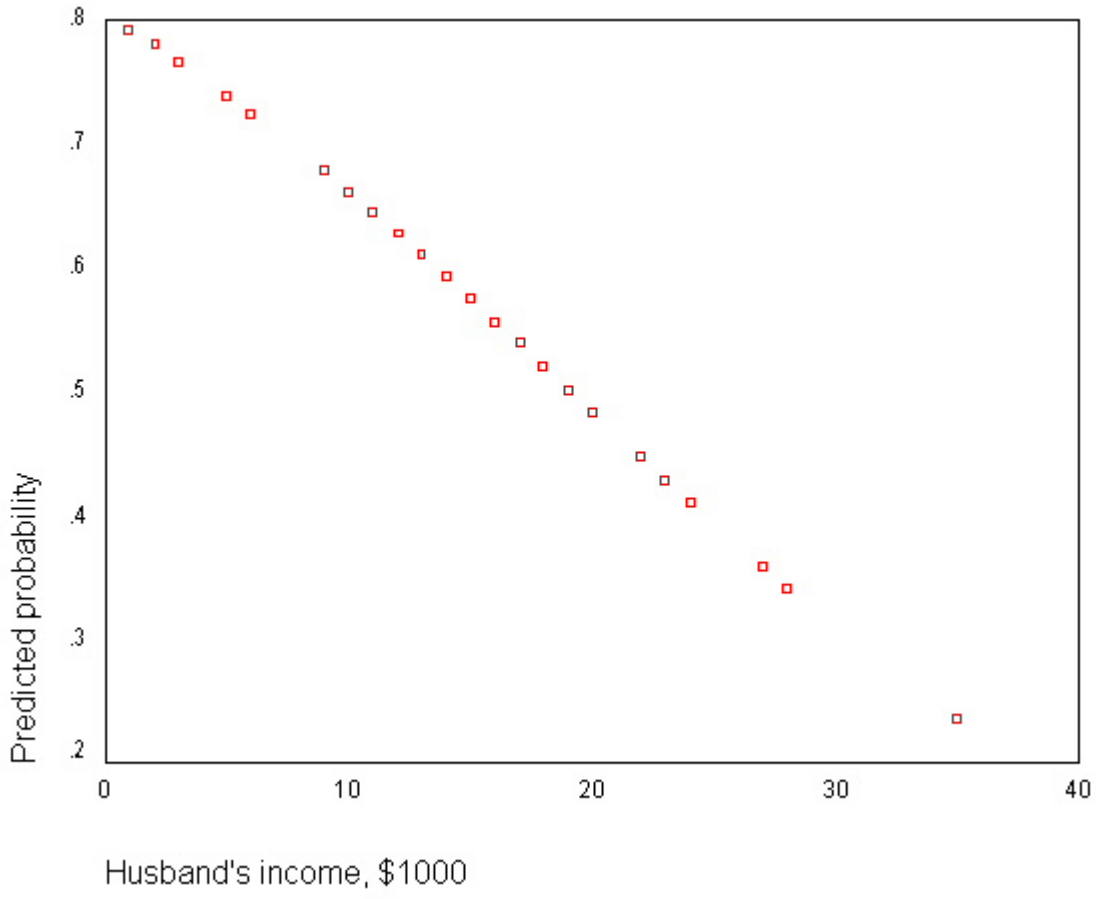
a The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	HUSBINC	-.074	.033	4.877	1	.027	.929
	Constant	1.406	.542	6.734	1	.009	4.079

a Variable(s) entered on step 1: HUSBINC.

```
graph
 /scatterplot(bivar) = husbinc with pre_3.
```



page 473 calculations in the middle of page 473 and the top of 474.

NOTE: The R-squared values given by SPSS are different from those in the text.

```
GET FILE='D:\womenlf.sav'.
compute nwk = 1.
if workstat = 0 nwk = 0.
execute.
```

```
logistic regression var=nwk
 /method=enter husbinc chilpres.
```

Case Processing Summary			
Unweighted Cases(a)		N	Percent
Selected Cases	Included in Analysis	263	100.0
	Missing Cases	0	.0
	Total	263	100.0
Unselected Cases		0	.0
Total		263	100.0

a If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding	
Original Value	Internal Value
.00	0
1.00	1

Classification Table(a,b)					
			Predicted		
			NWK		Percentage Correct
	Observed		.00	1.00	
Step 0	NWK	.00	155	0	100.0
		1.00	108	0	.0
	Overall Percentage				58.9

a Constant is included in the model.

b The cut value is .500

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.361	.125	8.308	1	.004	.697

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	HUSBINC	4.928	1	.026
		CHILPRES	31.599	1	.000
	Overall Statistics		35.714	2	.000

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	36.418	2	.000

	Block	36.418	2	.000
	Model	36.418	2	.000

Model Summary			
Step	**-2 Log likelihood**	**Cox & Snell R Square**	**Nagelkerke R Square**
1	319.733	.129	.174

Classification Table(a)					
			Predicted		
			NWK		**Percentage Correct**
	Observed		**.00**	**1.00**	
Step 1	**NWK**	**.00**	132	23	85.2
		1.00	55	53	49.1
	Overall Percentage				70.3
a The cut value is .500					

Variables in the Equation							
		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**
Step 1(a)	**HUSBINC**	-.042	.020	4.575	1	.032	.959
	CHILPRES	-1.576	.292	29.065	1	.000	.207
	Constant	1.336	.384	12.116	1	.000	3.803
a Variable(s) entered on step 1: HUSBINC, CHILPRES.							

```
if workstat = 1 ptime = 0.
if workstat = 2 ptime = 1.
execute.
logistic regression var=ptime
 /method=enter husbinc chilpres.
```

Case Processing Summary			
Unweighted Cases(a)		**N**	**Percent**
Selected Cases	**Included in Analysis**	108	41.1
	Missing Cases	155	58.9
	Total	263	100.0
Unselected Cases		0	.0
Total		263	100.0
a If weight is in effect, see classification table for the total number of cases.			

Dependent Variable Encoding	
Original Value	**Internal Value**
.00	0
1.00	1

Classification Table(a,b)					
			Predicted		
			PTIME		Percentage Correct
	Observed		.00	1.00	
Step 0	PTIME	.00	0	42	.0
		1.00	0	66	100.0
	Overall Percentage				61.1
a Constant is included in the model.					
b The cut value is .500					

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.452	.197	5.243	1	.022	1.571

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	HUSBINC	7.602	1	.006
		CHILPRES	28.882	1	.000
	Overall Statistics		35.149	2	.000

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	39.847	2	.000
	Block	39.847	2	.000
	Model	39.847	2	.000

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	104.495	.309	.419

Classification Table(a)					
			Predicted		
			PTIME		Percentage Correct
	Observed		.00	1.00	
Step 1	PTIME	.00	33	9	78.6
		1.00	11	55	83.3
	Overall Percentage				81.5
a The cut value is .500					

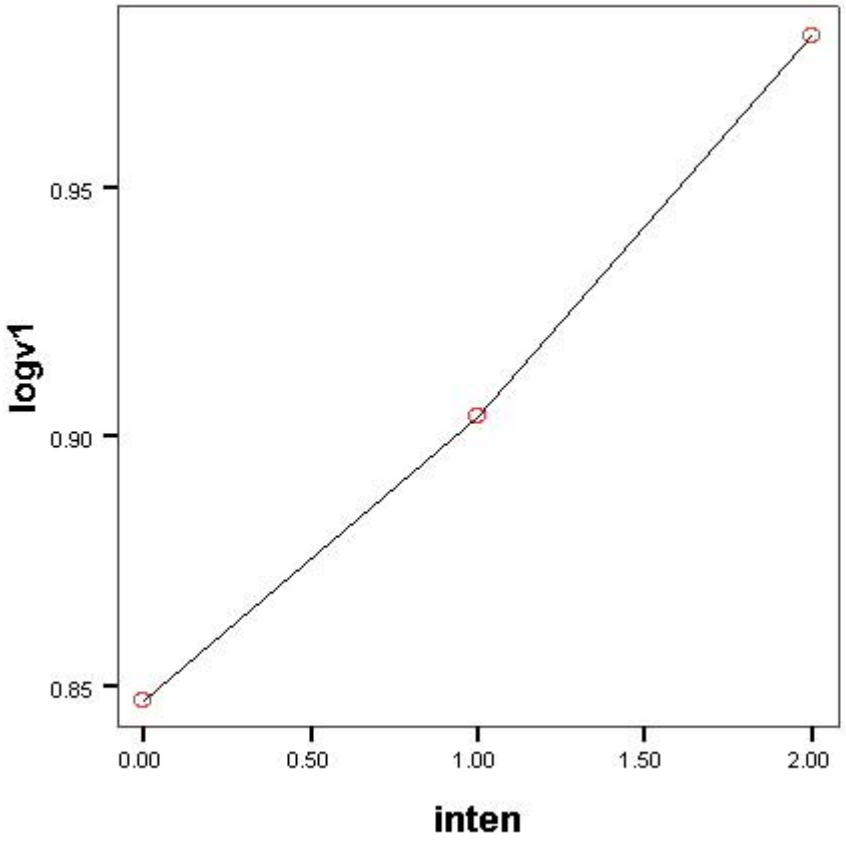
Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	HUSBINC	-.107	.039	7.506	1	.006	.898
	CHILPRES	-2.651	.541	24.013	1	.000	.071
	Constant	3.478	.767	20.554	1	.000	32.387
a Variable(s) entered on step 1: HUSBINC, CHILPRES.							

page 480 Figure 15.13 Empirical logits for voter turnout by intensity of partisan preference and perceived closeness of the election, for the . 1956 U.S. presidential election.

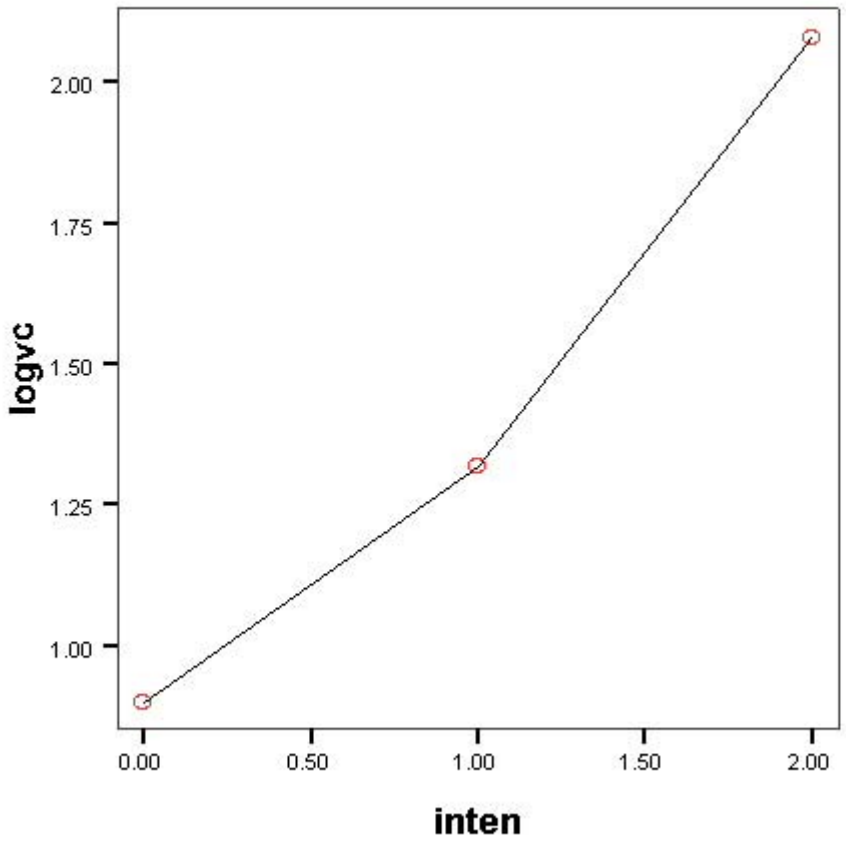
```
data list list / logv1 logvc inten.
begin data.
.847  .9   0
.904 1.318 1
.981 2.084 2
end data.
execute.
```

One-sided

```
IGRAPH
 /X1 = VAR(inten)
 /Y = VAR(logv1)
 /LINE(MEAN) STYLE = DOTLINE INTERPOLATE = STRAIGHT.
```




```
Close.

IGRAPH
 /X1 = VAR(inten)
 /Y = VAR(logvc)
 /LINE(MEAN) STYLE = DOTLINE INTERPOLATE = STRAIGHT.
```



page 482 Table 15.4 Deviances for models fit to the American voter data. Terms: alpha - perceived closeness; beta - intensity of preference; gamma - closeness by preference interaction. The column labeled k + 1 gives the number of parameters in the model, including the constant mu.

```
data list list / perclose inten1 inten2 voted wv.
begin data.
0 0 0 1 91
0 0 0 0 39
0 1 0 1 121
0 1 0 0 49
0 0 1 1 64
0 0 1 0 24
1 0 0 1 214
1 0 0 0 87
1 1 0 1 284
1 1 0 0 76
1 0 1 1 201
1 0 1 0 25
end data.
execute.

weight by wv.

compute clspref1 = perclose*inten1.
compute clspref2 = perclose*inten2.
execute.
```

Model 1:

```
logistic regression var=voted
 /method=enter perclose inten1 inten2 clspref1 clsp ref2.
```

Case Processing Summary			
Unweighted Cases(a)		**N**	**Percent**
Selected Cases	**Included in Analysis**	12	100.0
	Missing Cases	0	.0
	Total	12	100.0
Unselected Cases		0	.0
Total		12	100.0
a If weight is in effect, see classification table for the total number of cases.			

Dependent Variable Encoding	
Original Value	**Internal Value**
.00	0
1.00	1

Classification Table(a,b)					
			Predicted		
			VOTED		**Percentage Correct**
	Observed		**.00**	**1.00**	
Step 0	**VOTED**	**.00**	0	300	.0
		1.00	0	975	100.0
	Overall Percentage				76.5
a Constant is included in the model.					
b The cut value is .500					

Variables in the Equation							
		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**
Step 0	**Constant**	1.179	.066	318.704	1	.000	3.250

Variables not in the Equation					
			Score	**df**	**Sig.**
Step 0	**Variables**	**PERCLOSE**	8.828	1	.003
		INTEN1	.002	1	.969
		INTEN2	14.539	1	.000
		CLSPREF1	1.631	1	.202
		CLSPREF2	23.730	1	.000
	Overall Statistics		31.884	5	.000

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	34.832	5	.000
	Block	34.832	5	.000
	Model	34.832	5	.000

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1356.434	.027	.041

Classification Table(a)					
			Predicted		
			VOTED		Percentage Correct
	Observed		.00	1.00	
Step 1	VOTED	.00	0	300	.0
		1.00	0	975	100.0
	Overall Percentage				76.5
a The cut value is .500					

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	PERCLOSE	.053	.230	.053	1	.818	1.054
	INTEN1	.057	.256	.049	1	.824	1.058
	INTEN2	.134	.306	.190	1	.663	1.143
	CLSPREF1	.362	.313	1.331	1	.249	1.435
	CLSPREF2	1.051	.394	7.121	1	.008	2.860
	Constant	.847	.191	19.599	1	.000	2.333
a Variable(s) entered on step 1: PERCLOSE, INTEN1, INTEN2, CLSPREF1, CLSPREF2.							

Model 2:

```
logistic regression var=voted
 /method=enter perclose inten1 inten2.
```

Case Processing Summary			
Unweighted Cases(a)		N	Percent
Selected Cases	Included in Analysis	12	100.0
	Missing Cases	0	.0
	Total	12	100.0
Unselected Cases		0	.0
Total		12	100.0
a If weight is in effect, see classification table for the total number of cases.			

Dependent Variable Encoding	
Original Value	**Internal Value**
.00	0
1.00	1

Classification Table(a,b)					
			Predicted		
			VOTED		Percentage Correct
	Observed		.00	1.00	
Step 0	VOTED	.00	0	300	.0
		1.00	0	975	100.0
	Overall Percentage				76.5
a Constant is included in the model.					
b The cut value is .500					

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	1.179	.066	318.704	1	.000	3.250

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	PERCLOSE	8.828	1	.003
		INTEN1	.002	1	.969
		INTEN2	14.539	1	.000
	Overall Statistics		27.142	3	.000

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	27.713	3	.000
	Block	27.713	3	.000
	Model	27.713	3	.000

Model Summary			
Step	**-2 Log likelihood**	**Cox & Snell R Square**	**Nagelkerke R Square**
1	1363.553	.022	.032

Classification Table(a)

			Predicted		
			VOTED		Percentage Correct
	Observed		.00	1.00	
Step 1	VOTED	.00	0	300	.0
		1.00	0	975	100.0
	Overall Percentage				76.5
a The cut value is .500					

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	PERCLOSE	.407	.140	8.427	1	.004	1.502
	INTEN1	.302	.148	4.165	1	.041	1.352
	INTEN2	.800	.189	17.958	1	.000	2.224
	Constant	.607	.141	18.457	1	.000	1.835
a Variable(s) entered on step 1: PERCLOSE, INTEN1, INTEN2.							

Model 3:

```
logistic regression var=voted
 /method=enter perclose clspref1 clspref2.
```

Case Processing Summary			
Unweighted Cases(a)		N	Percent
Selected Cases	Included in Analysis	12	100.0
	Missing Cases	0	.0
	Total	12	100.0
Unselected Cases		0	.0
Total		12	100.0
a If weight is in effect, see classification table for the total number of cases.			

Dependent Variable Encoding	
Original Value	Internal Value
.00	0
1.00	1

Classification Table(a,b)					
			Predicted		
			VOTED		Percentage Correct
	Observed		.00	1.00	
Step 0	VOTED	.00	0	300	.0
		1.00	0	975	100.0
	Overall Percentage				76.5

a Constant is included in the model.
b The cut value is .500

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	1.179	.066	318.704	1	.000	3.250

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	PERCLOSE	8.828	1	.003
		CLSPREF1	1.631	1	.202
		CLSPREF2	23.730	1	.000
	Overall Statistics		31.667	3	.000

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	34.641	3	.000
	Block	34.641	3	.000
	Model	34.641	3	.000

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1356.625	.027	.040

Classification Table(a)					
			Predicted		
			VOTED		Percentage Correct
	Observed		.00	1.00	
Step 1	VOTED	.00	0	300	.0
		1.00	0	975	100.0
	Overall Percentage				76.5
a The cut value is .500					

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	PERCLOSE	-.002	.169	.000	1	.991	.998
	CLSPREF1	.418	.181	5.324	1	.021	1.519
	CLSPREF2	1.184	.247	22.942	1	.000	3.269

	Constant	.902	.112	64.806	1	.000	2.464
a Variable(s) entered on step 1: PERCLOSE, CLSPREF1, CLSPREF2.							

Model 4:

```
logistic regression var=voted
 /method=enter inten1 inten2 clspref1 clspref2.
```

Case Processing Summary

Unweighted Cases(a)		**N**	**Percent**
Selected Cases	**Included in Analysis**	12	100.0
	Missing Cases	0	.0
	Total	12	100.0
Unselected Cases		0	.0
Total		12	100.0
a If weight is in effect, see classification table for the total number of cases.			

Dependent Variable Encoding

Original Value	**Internal Value**
.00	0
1.00	1

Classification Table(a,b)

			Predicted		
			VOTED		**Percentage Correct**
	Observed		**.00**	**1.00**	
Step 0	**VOTED**	**.00**	0	300	.0
		1.00	0	975	100.0
	Overall Percentage				76.5
a Constant is included in the model.					
b The cut value is .500					

Variables in the Equation

		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**
Step 0	**Constant**	1.179	.066	318.704	1	.000	3.250

Variables not in the Equation

			Score	**df**	**Sig.**
Step 0	**Variables**	**INTEN1**	.002	1	.969
		INTEN2	14.539	1	.000
		CLSPREF1	1.631	1	.202
		CLSPREF2	23.730	1	.000

	Overall Statistics	31.823	4	.000

Omnibus Tests of Model Coefficients				
		Chi-square	**df**	**Sig.**
Step 1	**Step**	34.779	4	.000
	Block	34.779	4	.000
	Model	34.779	4	.000

Model Summary			
Step	**-2 Log likelihood**	**Cox & Snell R Square**	**Nagelkerke R Square**
1	1356.487	.027	.041

Classification Table(a)					
			Predicted		
			VOTED		**Percentage Correct**
	Observed		**.00**	**1.00**	
Step 1	**VOTED**	**.00**	0	300	.0
		1.00	0	975	100.0
	Overall Percentage				76.5
a The cut value is .500					

Variables in the Equation							
		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**
Step 1(a)	**INTEN1**	.020	.200	.010	1	.920	1.020
	INTEN2	.097	.262	.137	1	.712	1.102
	CLSPREF1	.414	.213	3.784	1	.052	1.513
	CLSPREF2	1.104	.320	11.909	1	.001	3.015
	Constant	.884	.106	69.683	1	.000	2.421
a Variable(s) entered on step 1: INTEN1, INTEN2, CLSPREF1, CLSPREF2.							

Model 5:

```
logistic regression var=voted
 /method=enter perclose.
```

Case Processing Summary			
Unweighted Cases(a)		**N**	**Percent**
Selected Cases	**Included in Analysis**	12	100.0
	Missing Cases	0	.0
	Total	12	100.0
Unselected Cases		0	.0
Total		12	100.0

a If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding	
Original Value	**Internal Value**
.00	0
1.00	1

Classification Table(a,b)					
			Predicted		
			VOTED		**Percentage Correct**
	Observed		**.00**	**1.00**	
Step 0	**VOTED**	**.00**	0	300	.0
		1.00	0	975	100.0
	Overall Percentage				76.5
a Constant is included in the model.					
b The cut value is .500					

Variables in the Equation							
		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**
Step 0	**Constant**	1.179	.066	318.704	1	.000	3.250

Variables not in the Equation					
			Score	**df**	**Sig.**
Step 0	**Variables**	**PERCLOSE**	8.828	1	.003
	Overall Statistics		8.828	1	.003

Omnibus Tests of Model Coefficients				
		Chi-square	**df**	**Sig.**
Step 1	**Step**	8.608	1	.003
	Block	8.608	1	.003
	Model	8.608	1	.003

Model Summary			
Step	**-2 Log likelihood**	**Cox & Snell R Square**	**Nagelkerke R Square**
1	1382.658	.007	.010

Classification Table(a)	
	Predicted

			VOTED		Percentage Correct
	Observed		.00	1.00	
Step 1	VOTED	.00	0	300	.0
		1.00	0	975	100.0
	Overall Percentage				76.5

a The cut value is .500

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	PERCLOSE	.411	.139	8.764	1	.003	1.509
	Constant	.902	.112	64.806	1	.000	2.464

a Variable(s) entered on step 1: PERCLOSE.

Model 6:

```
logistic regression var=voted
 /method=enter inten1 inten2.
```

Case Processing Summary			
Unweighted Cases(a)		N	Percent
Selected Cases	Included in Analysis	12	100.0
	Missing Cases	0	.0
	Total	12	100.0
Unselected Cases		0	.0
Total		12	100.0

a If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding	
Original Value	Internal Value
.00	0
1.00	1

Classification Table(a,b)					
			Predicted		
			VOTED		Percentage Correct
	Observed		.00	1.00	
Step 0	VOTED	.00	0	300	.0
		1.00	0	975	100.0
	Overall Percentage				76.5

a Constant is included in the model.

b The cut value is .500

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	1.179	.066	318.704	1	.000	3.250

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	INTEN1	.002	1	.969
		INTEN2	14.539	1	.000
	Overall Statistics		18.756	2	.000

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	19.428	2	.000
	Block	19.428	2	.000
	Model	19.428	2	.000

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1371.838	.015	.023

Classification Table(a)					
			Predicted		
			VOTED		Percentage Correct
	Observed		.00	1.00	
Step 1	VOTED	.00	0	300	.0
		1.00	0	975	100.0
	Overall Percentage				76.5
a The cut value is .500					

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	INTEN1	.292	.147	3.920	1	.048	1.338
	INTEN2	.804	.188	18.246	1	.000	2.234
	Constant	.884	.106	69.683	1	.000	2.421
a Variable(s) entered on step 1: INTEN1, INTEN2.							

page 482 Table 15.5 Analysis of deviance table for the American voter data, showing alternative likelihood ratio tests for the main effects of perceived closeness of the election and intensity of partisan preference.

```
NOTE: To get the G**2 terms, subtract the deviances.
Model 6 versus model 2: 1371.838 - 1363.552 = 8.286.
Model 4 versus model 1: 1368.554 - 1356.434 = 12.120.
Model 5 versus model 2: 1382.658 - 1363.552 = 19.106.
Model 3 versus model 1: 1368.042 - 1356.434 = 11.608.
Model 2 versus model 1: 1363.552 - 1356.434 = 7.118.
```