```
* Probit and Logit Models in SPSS.
* Copyright 2014 by Ani Katchova.

GET
  FILE='C:\Econometrics\Data\probit_insurance.sav'.

* Descriptive statistics.
DESCRIPTIVES VARIABLES=ins retire age hstatusg hhincome educyear married hisp
  /STATISTICS=MEAN STDDEV MIN MAX.

* Regression.
* Analyze > Regression > Linear. Dependent: (Yvar), Independent (Xvar).
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT ins
  /METHOD=ENTER retire age hstatusg hhincome educyear married hisp.

* Logit model.
* Analyze > Regression > Binary Logistic.  Dependent: (Yvar), Covariates (Xvar). Save
(Predicted Probablities).
LOGISTIC REGRESSION VARIABLES ins
  /METHOD=ENTER retire age hstatusg hhincome educyear married hisp
  /SAVE=PRED
  /CRITERIA=PIN(.05) POUT(.10) ITERATE(20) CUT(.5).
```

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  /STATISTICS=MEAN STDDEV MIN MAX.
```

Descriptives

C:\Econometrics\Data\probit_insurance.sav

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ins	3206	0	1	.39	.487
retire	3206	0	1	.62	.484
age	3206	52	86	66.91	3.676
hstatusg	3206	0	1	.70	.456
hhincome	3206	.00	1312.12	45.2639	64.33936
educyear	3206	0	17	11.90	3.305
married	3206	0	1	.73	.442
hisp	3206	0	1	.07	.260
Valid N (listwise)	3206				

```
* Regression.
* Analyze > Regression > Linear. Dependent: (Yvar), Independent (Xvar).
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT ins
  /METHOD=ENTER retire age hstatusg hhincome educyear married hisp.
```

Regression

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	hisp, age, hhincome, married, hstatusg, retire, educyear[b]	.	Enter

a. Dependent Variable: ins

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.287[a]	.083	.081	.467

a. Predictors: (Constant), hisp, age, hhincome, married, hstatusg, retire, educyear

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	62.840	7	8.977	41.143	.000[b]
	Residual	697.785	3198	.218		
	Total	760.625	3205			

a. Dependent Variable: ins

b. Predictors: (Constant), hisp, age, hhincome, married, hstatusg, retire, educyear

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.127	.161		.792	.429
	retire	.041	.018	.041	2.242	.025
	age	-.003	.002	-.022	-1.197	.231
	hstatusg	.066	.019	.061	3.370	.001
	hhincome	.000	.000	.065	3.579	.000
	educyear	.023	.003	.159	8.150	.000
	married	.123	.019	.112	6.377	.000
	hisp	-.121	.034	-.064	-3.594	.000

a. Dependent Variable: ins

```
* Logit model.
* Analyze > Regression > Binary Logistic.  Dependent: (Yvar), Covariates (Xvar). Save
(Predicted Probablities).
LOGISTIC REGRESSION VARIABLES ins
  /METHOD=ENTER retire age hstatusg hhincome educyear married hisp
  /SAVE=PRED
  /CRITERIA=PIN(.05) POUT(.10) ITERATE(20) CUT(.5).
```

Logistic Regression

Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	3206	100.0
	Missing Cases	0	.0
	Total	3206	100.0
Unselected Cases		0	.0
Total		3206	100.0

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

Dependent Variable Encoding

Original Value	Internal Value
0	0
1	1

Block 0: Beginning Block

Classification Table[a,b]

			Predicted		
			ins		Percentage
	Observed		0	1	Correct
Step 0	ins	0	1965	0	100.0
		1	1241	0	.0
	Overall Percentage				61.3

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	-.460	.036	160.651	1	.000	.632

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	retire	20.639	1	.000
		age	3.113	1	.078
		hstatusg	62.626	1	.000
		hhincome	71.001	1	.000

	educyear	170.480	1	.000
	married	68.997	1	.000
	hisp	59.422	1	.000
Overall Statistics		264.869	7	.000

Block 1: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	289.786	7	.000
	Block	289.786	7	.000
	Model	289.786	7	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	3989.757[a]	.086	.117

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Classification Table[a]

			Predicted		
			ins		Percentage Correct
	Observed		0	1	
Step 1	ins	0	1657	308	84.3
		1	896	345	27.8
	Overall Percentage				62.4

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	retire	.197	.084	5.469	1	.019	1.218
	age	-.015	.011	1.672	1	.196	.986
	hstatusg	.312	.092	11.603	1	.001	1.367
	hhincome	.002	.001	9.138	1	.003	1.002
	educyear	.114	.014	64.738	1	.000	1.121
	married	.579	.093	38.447	1	.000	1.784
	hisp	-.810	.196	17.135	1	.000	.445
	Constant	-1.716	.749	5.252	1	.022	.180

a. Variable(s) entered on step 1: retire, age, hstatusg, hhincome, educyear, married, hisp.