Multinomial Logistic Regression can be used with a categorical dependent variable that has more than two categories. Maximum-likelihood multinomial (polytomous) logistic regression can be done with SPSS using NOMREGt. For this example, the dependent variable marcat is marital status. This example uses 1990 IPUMS data, and includes black and white women 25 to 45.

1) Black   Black women are coded 1, and white women are coded 0.
2) Age   Woman's age
3) Anychild   Coded 1 if the woman has an "own" child living in her household with her.

The program used for the output you will see below follows.

```
GET FILE='C:\all\help\helpnew\mlogit\mlogit.sav'.
select if adjwt gt 0 .
WEIGHT BY adjwt.
value labels marcat
   4  'Married, spouse present'  3  'div, sep'
   2  'widowed'                  1  'never married' .
desc var = marcat black age anychild .
FREQUENCIES VARIABLES = marcat.

NOMREG marcat WITH black age anychild
/CRITERIA = CIN(95) DELTA(0) MXITER(100) MXSTEP(5) CHKSEP(20) LCONVERGE(0)
PCONVERGE(1.0E-6) SINGULAR (1.0E-8)
/MODEL /INTERCEPT = INCLUDE
/PRINT = PARAMETER SUMMARY LRT.
```

Note that the "**weight**" procedure DOES NOT normalize weights. If using a weight, be sure to adjust so the mean of weights is 1. See:http://staff.washington.edu/glynn/adjspss.pdf

The weighted means of all of the variables are:

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
MARCAT	399307	1.00	4.00	3.2822	1.12453
BLACK	399307	.00	1.00	.1294	.33559
AGE	399307	25.00	45.00	34.5148	5.88362
ANYCHILD	399307	.00	1.00	.6662	.47159
Valid N (listwise)	399307				

The weighted frequencies for the dependent variable are:

MARCAT

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00 never married	69252	17.3	17.3	17.3
	2.00 widowed	4277	1.1	1.1	18.4
	3.00 div, sep	70310	17.6	17.6	36.0
	4.00 Married, spouse present	255467	64.0	64.0	100.0
	Total	399307	100.0	100.0	

Nominal Regression

Case Processing Summary

		N	Marginal Percentage
MARCAT	1.00 never married	69252.05	17.3%
	2.00 widowed	4277.16	1.1%
	3.00 div, sep	70310.48	17.6%
	4.00 Married, spouse present	255467.31	64.0%
Valid		399307.00	100.0%
Missing		.00	
Total		399307.00	
Subpopulation		84	

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	136758.429			
Final	7982.234	128776.194	9	.000

Pseudo R-Square

Cox and Snell	.276
Nagelkerke	.325
McFadden	.171

Likelihood Ratio Tests

Effect	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	31687.794	23705.560	3	.000
BLACK	35519.313	27537.079	3	.000
AGE	24715.235	16733.000	3	.000
ANYCHILD	90595.979	82613.745	3	.000

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

Parameter Estimates

MARCAT(a)		B	Std. Error	Wald	df	Sig.
1.00 never married	Intercept	2.911	.030	9287.639	1	.000
	BLACK	2.176	.014	22717.525	1	.000
	AGE	-.093	.001	10428.479	1	.000
	ANYCHILD	-2.909	.012	61029.559	1	.000
2.00 widowed	Intercept	-7.428	.114	4242.362	1	.000
	BLACK	1.550	.037	1749.133	1	.000
	AGE	.102	.003	1248.980	1	.000
	ANYCHILD	-.853	.034	643.845	1	.000
3.00 div, sep	Intercept	-1.411	.027	2639.259	1	.000
	BLACK	1.337	.012	11531.878	1	.000
	AGE	.020	.001	732.420	1	.000
	ANYCHILD	-1.082	.009	13096.462	1	.000

a The reference category is: 4.00 Married, spouse present.

An example of how to present Multinomial Logistic Regression results follows.

Results of Multinomial Logistic Regression, Marital Status of Black and White Women Age 25-45.

	Never Married	Widowed	Divorced/Separated
Black	2.18***	1.55***	1.34***
	(.01)	(.04)	(.01)
Age	-0.09***	0.10***	0.02***
	(.00)	(.00)	(.00)
Own Child in home	-2.91***	-0.85***	-1.08***
	(.01)	(.03)	(.01)
Intercept	2.91***	-7.43***	-1.41***
	(.03)	(.11)	(.03)
N	69,252	4,277	70,310

Total N = 399,307
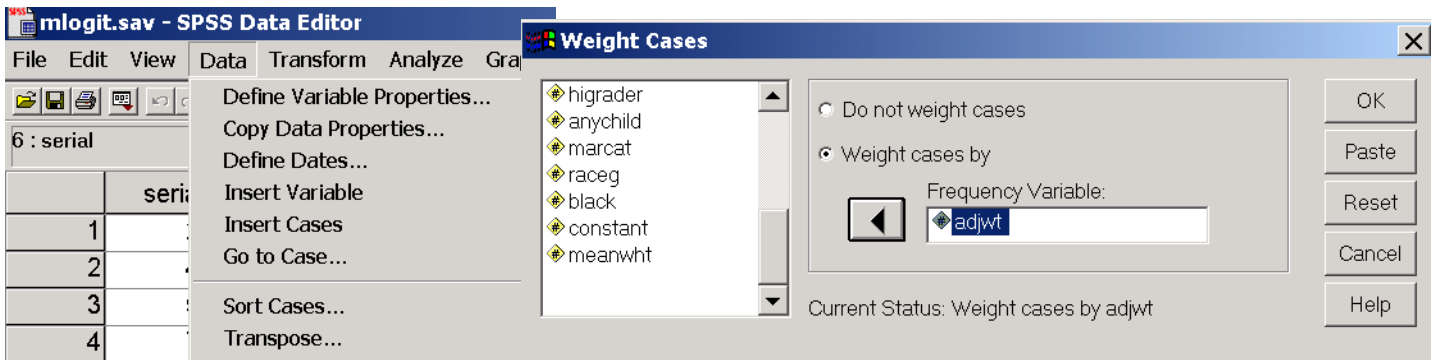Notes: Reference category for the equation is Married with Spouse Present.
        Standard errors in parentheses.
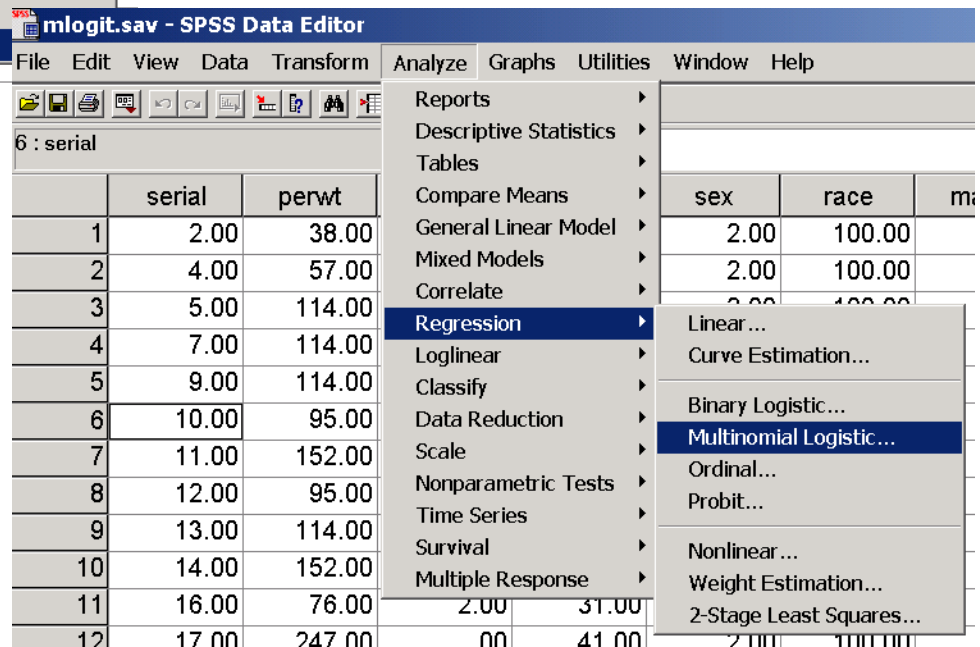   * p # .05   ** p # .01   *** p # .001 (two-tailed tests).

You can also accomplish this by using point and click.

To weight the data, go to Data on the overhead menu, and then Weight Cases. Click on Weight cases by, and then select the variable.

For multinomial regression, choose Analyze, then Regression, then Multinomial Logistic Regression.

The Multinomial Logistic Regression window will appear. Chose the dependent and independent variables, and then click okay (or paste to put the syntax into your syntax window).