

Multiple Logistic Regression Hypothetical Widget Example

```
logistic regression vars=success with yrsexp prevbiz
/print=summary ci(.95) goodfit iter(1)
/classplot.
```

Block 0: Beginning Block

Iteration History^{a,b,c}

Iteration	-2 Log likelihood	Coefficients
		Constant
Step 1	69.235	.080
0 2	69.235	.080

- a. Constant is included in the model.
- b. Initial -2 Log Likelihood: 69.235
- c. Estimation terminated at iteration number 2 because parameter estimates changed by less than .001.

Classification Table^{a,b}

Observed		Predicted		
		success		Percentage Correct
		0	1	
Step 0	success	0	24	.0
		1	26	100.0
Overall Percentage				52.0

- 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	.080	.283	.080	1	.777	1.083

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	yrsexp	13.127	1	.000
		prevbiz	8.013	1	.005
Overall Statistics			13.398	2	.001

Block 1: Method = Enter

Iteration History^{a,b,c,d}

Iteration	-2 Log likelihood	Coefficients		
		Constant	yrsexp	prevbiz
Step 1	54.878	-1.750	.195	-.570
1 2	54.454	-2.160	.242	-.774
	54.450	-2.205	.247	-.796
	54.450	-2.206	.247	-.796

- a. Method: Enter
- b. Constant is included in the model.
- c. Initial -2 Log Likelihood: 69.235
- d. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	14.785	2	.001
	Block	14.785	2	.001
	Model	14.785	2	.001

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	54.450 ^a	.256	.341

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	4.571	7	.712

Contingency Table for Hosmer and Lemeshow Test

		success = 0		success = 1		Total
		Observed	Expected	Observed	Expected	
Step 1	1	6	5.307	0	.693	6
	2	4	4.861	2	1.139	6
	3	3	3.880	3	2.120	6
	4	4	3.060	2	2.940	6
	5	3	2.076	2	2.924	5
	6	2	2.401	5	4.599	7
	7	1	1.168	4	3.832	5
	8	1	.620	3	3.380	4
	9	0	.627	5	4.373	5

Classification Table^a

Observed		Predicted			Percentage Correct
		success			
		0	1		
Step 1	success	0	15	9	62.5
		1	6	20	76.9
	Overall Percentage				70.0

a. The cut value is .500

Variables in the Equation

Step	Variable	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
								Lower	Upper
Step 1	yrsexp	.247	.103	5.741	1	.017	1.280	1.046	1.568
	prevbiz	-.796	1.153	.478	1	.490	.451	.047	4.316
	Constant	-2.206	.811	7.390	1	.007	.110		

a. Variable(s) entered on step 1: yrsexp, prevbiz.

To identify factors that predict success in the widget business, a multiple logistic regression analysis was conducted, simultaneously entering years of prior experience in the widget field and prior ownership of a business into the model. The results indicated that, together, years of experience and prior ownership accounted for a significant amount of variance in success (likelihood ratio $\chi^2 = 14.785$). The Nagelkerke R^2 indicated approximately 34% of the variance in success of the new business was accounted for by the predictors. Prior ownership was not significantly independently related to success ($b = -.80$, $OR = .45$, ns). Years of experience was significantly related to the probability of success ($b = .25$, $OR = 1.28$, $p < .05$) after controlling for prior business ownership. For every additional year of experience in the widget business, there is approximately a 28% increase in probability of success in the new business.