

### A14.3 (CD-ROM TOPIC) USING SPSS FOR MULTIPLE REGRESSION

In Appendix A13.3, instructions are provided for using SPSS for simple linear regression. The same set of instructions is valid in using SPSS for multiple regression. To perform a multiple regression for the OmniPower sales data, open the **OMNI.SAV** file. Select **Analyze → Regression → Linear**.

1. In the Linear Regression dialog box, enter **bars** in the Dependent: edit box and **price** and **promotion** in the Independent(s): edit box. Click the **Statistics** button.

2. In the Linear Regression: Statistics dialog box, select the **Estimates**, **Confidence intervals**, and **Model fit** check boxes. Click the **Continue** button. Click the **Plots** button.
3. In the Linear Regression: Plots dialog box, select the **Histogram** and/or the **Normal probability plot** check boxes to check normality. To construct a scatter plot of the residuals, enter **\*ZRESID** (for residuals in Z units) in the Y: edit box and **\*ZPRED** (the predicted Y values in Z units) in the X: edit box. Click the **Continue** button. Click the **OK** button.

Figure A14.7 is the SPSS output for OmniPower sales data.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.870 <sup>a</sup>	.758	.742	638.065

a. Predictors: (Constant), Promotion, price

  

ANOVA <sup>b</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	39472731	2	19736365.39	48.477	.000 <sup>a</sup>
	Residual	12620947	31	407127.312		
	Total	52093677	33			

a. Predictors: (Constant), Promotion, price  
b. Dependent Variable: bars

  

Coefficients <sup>a</sup>								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	5837.521	628.150		9.293	.000	4556.400	7118.642
	price	-53.217	6.852	-.690	-7.766	.000	-67.193	-39.242
	Promotion	3.613	.685	.468	5.273	.000	2.216	5.011

a. Dependent Variable: bars

**FIGURE A14.7** SPSS Output for OmniPower Sales Data

### Using SPSS for Dummy Variables

In order to carry out a regression analysis with dummy variables, the categories of the dummy variable must be coded as 0 and 1. Open the **HOUSE3.SAV** file. The fireplace variable has already been coded as 0 and 1 and the value labels indicate the labels for each category. If the dummy variable has not already been coded as a 0–1 variable, you can recode the variable by selecting **Transform → Automatic Recode**.

1. Enter **fireplac** in the Variables -> New Name edit box. Enter **fire** in the New Name: box and click the **Add New Name** button. Click the **OK** button. A new variable, fire, has been created that has a code of 1 for those houses without a fireplace and 2 for those houses with a fireplace.
2. To create a variable (named fired) that has a code of 0 for those houses without a fireplace and 1 for those houses with a fireplace, select **Transform → Compute**.

3. In the Compute Variable dialog box, enter **fired** in the Target Variable: edit box and **fire - 1** in the Numeric Expression: edit box. Click the **OK** button. Continue with the regression analysis as discussed previously.

### Using SPSS for Interactions

To create an interaction term for the variables size and fireplace, open the **HOUSE3.SAV** file. Select **Transform → Compute**.

1. In the Compute Variable dialog box, enter the name of the new variable (such as **sizefire**) in the Target Variable: edit box.
2. Enter **size\*fireplac** in the Numeric Expression: edit box. Click the **OK** button. Continue with the regression analysis as discussed previously.