Diagnostic Tools for ANCOVA Models

You can use either PROC REG or PROC GLM to perform diagnostics on your ANCOVA model. However, PROC REG has more diagnostic features than PROC GLM, so we will focus on PROC REG. Let's make a quick comparison of the diagnostic features of these two procedures.

PROC REG and PROC GLM both have options that request a panel of summary diagnostic plots. This panel includes scatter plots of residuals, absolute residuals, studentized residuals, and observed responses by predicted values; studentized residuals by leverage; Cook’s D by observation; a Q-Q plot of residuals; a residual histogram; and a residual-fit spread plot.

PROC REG also has the following features that PROC GLM does not offer: multicollinearity diagnostics and plots of the DFBETA and DFFITS statistics. These last two statistics are useful for identifying influential observations.

Remember that, unlike PROC REG, PROC GLM supports the CLASS statement to create the design variables needed for the categorical variables in an ANCOVA model. As you saw in an earlier lesson, PROC GLMSELECT has an option to create and output the design matrix with all design variables (including design variables for categorical variables) to a data set. You can then use that data set in PROC REG to take advantage of the additional diagnostics.
