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Practice 1.2 (Level 2): Comparing a Linear Model to a Quadratic Model

Task

In this practice, you compare the two models that you defined in the Level 1 practice.

Note: Before you complete this practice, you must run the code for practice 1.1 in the same SAS session.

Reminder: Make sure you've defined the **mydata** library.

1. To compare the two models created in the Level 1 practice, write a PROC REG step with two MODEL statements, as follows:
   - As the input data set, specify the data set that contains the design matrix, which was output from PROC GLMSELECT in the Level 1 practice.
   - To obtain plots of the residuals versus the regressors, add the RESIDUALS keyword to your plots request in PROC REG. To help in detecting patterns, use the SMOOTH suboption of the RESIDUALS plots request to add LOESS smoothed curves to the residual plots. **Note:** To see how to add these options to your code, consult the online documentation for PROC REG.

```
proc reg data=d_disp plots(only label) =
                    (residuals(smooth));
   LINEAR: model Sales=Dispensers;
   QUADRATIC: model Sales=&_GLSMOD;
run;
quit;
```

2. Submit the code and compare the residual plots from the two models. Which model fits your data better?

   As shown in the results, the plot of the residuals versus the regressor (**Dispensers**) for the linear model shows a definite pattern of curvature, indicating that the model might need a quadratic term.

   For the quadratic model, the plots of the residuals versus **Dispensers** and the residuals versus **Dispensers^2** indicate a much better fit.

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