Practice: Using the Correlation Analysis Task to Describe the Relationship between Continuous Variables

The percentage of body fat, age, weight, height, and 10 body circumference measurements (for example, abdomen) were recorded for 252 men by Dr. Roger W. Johnson of Calvin College in Minnesota. The data are in the **bodyfat2** data set. Body fat, one measure of health, has been accurately estimated by a water displacement measurement technique.

1. Use PROC CORR to generate scatter plots and correlations for the VAR variables **Age**, **Weight**, and **Height**, and the circumference measures versus the WITH variable, **PctBodyFat2**.

   IMPORTANT: For PROC CORR, ODS Graphics limits you to 10 VAR variables at a time. For this exercise, look at the relationships with **Age, **Weight**, and **Height** separately from the circumference variables (**Neck**, **Chest**, **Abdomen**, **Hip**, **Thigh**, **Knee**, **Ankle**, **Biceps**, **Forearm**, and **Wrist**).

   Note: This limitation exists only on the graphics that are obtained from ODS. The correlation table displays all variables in the VAR statement by default.

2. Modify the task to generate the scatter plots for the remaining variables, **Biceps**, **Forearm**, and **Wrist**.

3. Examine all of the plots. Can straight lines adequately describe the relationships?

4. Are there any outliers that you should investigate?

5. Which variable has the highest correlation with **PctBodyFat2**?

6. What is the *p*-value for the coefficient? Is it statistically significant at the 0.05 level?

7. Modify the Correlation Analysis task to generate correlations among all the variables previously mentioned (**Age**, **Weight**, **Height**, **Neck**, **Chest**, **Abdomen**, **Hip**, **Thigh**, **Knee**, **Ankle**, **Biceps**, **Forearm**, and **Wrist**) minus **PctBodyFat2**. Don't generate descriptive statistics or plots again. Select only the highest five per variable.

   Note: You'll need to edit the generated code to select the highest five.

8. Are there any notable relationships?

Show Solution