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Practice: Performing Multiple Regression Using the Linear Regression Task

Using the **bodyfat2** table, fit a multiple regression model with multiple predictors, and then modify the model by removing the least significant predictors

1. Run a regression of **PctBodyFat2** on the variables **Age**, **Weight**, **Height**, **Neck**, **Chest**, **Abdomen**, **Hip**, **Thigh**, **Knee**, **Ankle**, **Biceps**, **Forearm**, and **Wrist**.

   Note: Turn off ODS Graphics.

2. Compare the ANOVA table with this one from the model with only **Weight**. What is different?

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	6593.01614	6593.01614	150.03	<.001
Error	250	10986	43.94389		
Corrected Total	251	17579			

3. How do the R-Square and the adjusted R-Square compare with these statistics for the **Weight** regression?

Root MSE	6.62902	R-Square	0.3751
Dependent Mean	19.15079	Adj R-Sq	0.3726
Coeff Var	34.61485		

4. Did the estimate for the intercept change? Did the estimate for the coefficient of **Weight** change?

5. To simplify the model, rerun the model from step 1, but eliminate the variable with the highest *p*-value. Compare the output with the model from step 1.

6. Did the *p*-value for the model change?

7. Did the R-Square and the adjusted R-Square values change?

8. Did the parameter estimates and their *p*-values change?

9. To simplify the model further, rerun the model from step 5, but eliminate the variable with the highest *p*-value. How did the output change from the previous model?

10. Did the number of parameters with *p*-values less than 0.05 change?

Show Solution