

Due date: 12/1 by 7:25pm EST.

1. Chapter 10, page 415 10.11.

***10.11.** Refer to **Patient satisfaction** Problem 6.15.

- a. Obtain the studentized deleted residuals and identify any outlying Y observations. Use the Bonferroni outlier test procedure with $\alpha = .10$. State the decision rule and conclusion.
- b. Obtain the diagonal elements of the hat matrix. Identify any outlying X observations.

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- c. Hospital management wishes to estimate mean patient satisfaction for patients who are $X_1 = 30$ years old, whose index of illness severity is $X_2 = 58$, and whose index of anxiety level is $X_3 = 2.0$. Use (10.29) to determine whether this estimate will involve a hidden extrapolation.
 - d. The three largest absolute studentized deleted residuals are for cases 11, 17, and 27. Obtain the $DFBETAS$, $DFBETAS$, and Cook's distance values for this case to assess its influence. What do you conclude?
 - e. Calculate the average absolute percent difference in the fitted values with and without each of these cases. What does this measure indicate about the influence of each of these cases?
 - f. Calculate Cook's distance D_i for each case and prepare an index plot. Are any cases influential according to this measure?
2. Chapter 11, page 472. **Be precise and concise 2-3 sentences or bullet points**
 - 11.1. One student remarked to another: "Your residuals show that nonconstancy of error variance is clearly present. Therefore, your regression results are completely invalid." Comment.
 - 11.2. An analyst suggested: "One nice thing about robust regression is that you need not worry about outliers and influential observations." Comment.
 - 11.3. Lowess smoothing becomes difficult when there are many predictors and the sample size is small. This is sometimes referred to as the "curse of dimensionality." Discuss the nature of this problem.
 - 11.4. Regression trees become difficult to utilize when there are many predictors and the sample size is small. Discuss the nature of this problem.
 - 11.5. Describe how bootstrapping might be used to obtain confidence intervals for regression coefficients when ridge regression is employed.