Ch3 Quiz Questions

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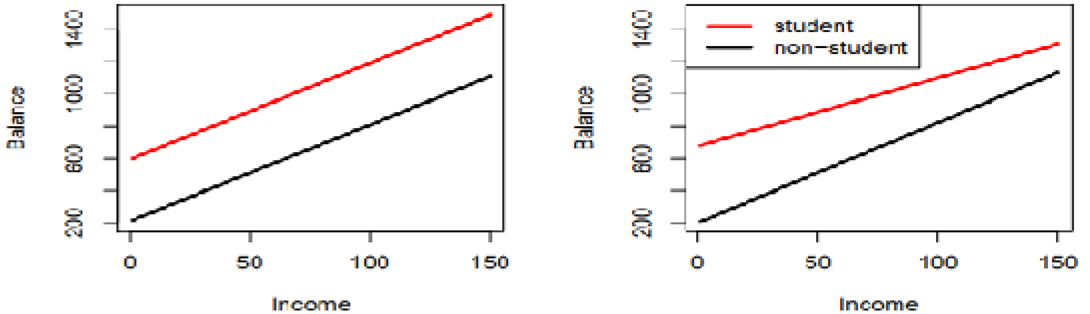
Multiple Choice

1/1 point (graded)

Which of the following statements are true?



- [x] In the balance vs. income * student model plotted on slide 44, the estimate of beta3 is negative.
- [ ] One advantage of using linear models is that the true regression function is often linear.
- [ ] If the F statistic is significant, all of the predictors have statistically significant effects.
- [ ] In a linear regression with several variables, a variable has a positive regression coefficient if and only if its correlation with the response is positive.

Explanation

We can see that the estimate of beta3 is negative because the slope of the student line is smaller than the slope of the non-student line. That is, being a student diminishes the effect of income on balance.

The linear model is almost always wrong; however, it is often still useful.

The F statistic tests the null hypothesis that none of the predictors has any effect. Rejecting that null means concluding that *some* predictor has an effect, not that *all* of them do.

Positive correlation only means that the univariate regression has a positive correlation. See slide 20 for a counterexample.