t-Test Example

Suppose we have a regression of college GPA on three explanatory variables: high school GPA, ACT score, and number of lectures skipped per week.

$$\widehat{collGPA} = \begin{array}{cccc} 1.39 & + \; .412 \; hsGPA + & .015 \; ACT - & .083 \; skipped \\ (.33) & (.094) & (.011) & (.026) \end{array}$$

- Estimated standard error for each coefficient is in parentheses.
- We get the *t*-statistic by dividing the coefficient by its standard error.
  - Recall our rule of thumb: If the coefficient is greater than twice the standard error, we're likely to have significance.
- *n* = 141: This is a large sample size, so our critical values are approximately those of a standard normal distribution.

t-Test Example (cont.)

$$t_{\text{hsGPA}} = 4.38 > c_{0.01} = 2.61$$

$$t_{\text{ACT}} = 1.36 < c_{0.05} = 1.98$$

$$|t_{\text{skipped}}| = |\text{-}3.19| > c_{0.01} = 2.61$$

- $c_{0.01}$ represents the critical value at the .01 level.
- The effects of *hsGPA* and *skipped* are significantly different from zero, even at the 1% high significance level.
- The effect of *ACT* is not significantly different from zero at the 5% level.