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Small Assignment 3

Are rent rates influenced by the student population in a college town? Let *rent* be the average monthly rent paid on rental units in a college town in the United States. Let *pop* denote the total city population, *avginc* the average city income, and *pctstu* the student population as a percentage of the total population. One model to test the relationship is

$$\log(\text{rent}) = \beta_0 + \beta_1 \log(\text{pop}) + \beta_2 \log(\text{avginc}) + \beta_3 \text{pctstu} + u$$

1. State the null hypothesis that size of the student body relative to the population has no ceteris paribus effect on monthly rents. State the alternative hypothesis that there is an effect.
2. What signs do you expect from β_1 and β_2 ?
3. Suppose we estimate the model using data on 64 college towns, and we deliver the estimates (with standard errors in parentheses)

$$\begin{aligned}\widehat{\beta}_0 &= 0.043 (0.844) \\ \widehat{\beta}_1 &= 0.076 (0.039) \\ \widehat{\beta}_2 &= 0.507 (0.081) \\ \widehat{\beta}_3 &= 0.0056 (0.0017) \\ R^2 &= 0.458\end{aligned}$$

Name two things that are wrong with the statement “A 10% increase in population is associated with about a 7.6% increase in rent.”

4. Test the hypothesis in part 1 at the 1% significance level. Be sure to state the critical value that you use.