Confidence intervals for regression coefficients

- Consider the model $y = \beta_1 + \beta_2 x_+ u$
- You estimate the model using n observations and find coefficients $\hat{\beta}_1$ and $\hat{\beta}_2$
- Confidence intervals for the coefficients are constructed using the same logic as confidence intervals for sample means
- Consider the null hypothesis that the true coefficient on x is equal to β_2
- As we discussed previously, $\frac{\hat{\beta}_2 - \beta_2}{se(\hat{\beta}_2)}$ has a t distribution with $n - 2$ degrees of freedom

Confidence intervals for regression coefficients

1. 95% confidence interval for β_2:
   $[\hat{\beta}_2 - se(\hat{\beta}_2) \cdot t_{n-2,0.025},\ \hat{\beta}_2 + se(\hat{\beta}_2) \cdot t_{n-2,0.025}]$.
2. 99% confidence interval for β_2:
   $[\hat{\beta}_2 - se(\hat{\beta}_2) \cdot t_{n-2,0.005},\ \hat{\beta}_2 + se(\hat{\beta}_2) \cdot t_{n-2,0.005}]$.
3. **Exercise:** Consider regression results with $N = 25$, $\hat{\beta}_2 = 1.1$ and the standard error of 0.41. Use this information together with a t-table to construct 95% and 99% confidence intervals for β_2.