Hypothesis & Parameters:

\[ B = \text{slope of the true regression line relating} \ldots (\text{insert details}) \]

\[ H_0: B = 0 \quad \text{*(USUALLY} B = 0; \text{can be} B = 1 \text{if testing proportionality)*} \]

\[ H_A: B > \frac{t}{2} 0 \quad \text{*> = positive, < = negative} \]

\[ \neq \text{is there a relationship?!} \]

Conditions

\[ \rightarrow \text{Linear: 1) Scatterplot} \quad \text{NO!} \]

\[ 2) \text{Residual plot} \rightarrow \text{random/night sky = linear} \]

\[ \rightarrow \text{pattern = BAD} \]

I \rightarrow \text{Independent} \rightarrow \text{Sample is less than 10% population}

N \rightarrow \text{Normal} \rightarrow 1) \text{Histogram of Residual Probability}

\[ 2) \text{Normal Probability Plot} \]

\[ \text{No outliers, no extreme skew, relatively "Normal"} \]

E \rightarrow \text{Equal Variance} \rightarrow 1) \text{Residual Plot}

\[ \text{Even positive & negative values} \]

\[ 2) \text{Scatterplot & Regression Line} \]

\[ \text{Even distribution above & below reg. line} \]
R = Random as stated.

T-Test for Linear Regression

1. Given in Computer Output:
   - Always read "bottom line" of comp out.
   - Gives T & p value. df = sample - 2
   - Divide p-value by 2, if testing B ≠ 0, B < 0

2. Calculator
   - Enter data in L1 & L2

3. Use the formula

\[ \epsilon = \frac{b - B}{SE_b} \]

- df = sample - 2, use more conservative when looking up in chart.

Reject \( \Rightarrow \) little p
Fail to Reject \( \Rightarrow \) big p

Sentence linking p-value & \( \alpha \), and the CONTEXT!
T- Interval for Linear Regression

1. Formula / Computer Output
   \( y = a + bx \)
   \( a \) and \( b \) are calculated directly from the output.
   \( \hat{y} \) is given in the output.

2. Calculation
   - Enter data \( L_1 \) and \( L_2 \).

We are ___% confident that the interval to ___ captures the slope of the true regression line, relating (insert details).

- Ho: \( b = 0 \)
- If zero is included: Fail to reject

\( y = \hat{a} + \hat{b}x \)

"predicted" \( y \)-int