1. Data: \((x_1, y_1), \ldots, (x_n, y_n)\) (n individuals, two variables \(x\) and \(y\))

2. A statistical model: we assume that the relationship between \(x\) and \(y\) in the population satisfies

   (a) the average value of \(y\) for a particular value of \(x\) is \(\alpha + \beta x\)

   (b) For each value of \(x\), the values of \(y\) have a normal distribution

   (c) For each value of \(x\), the distribution of \(y\) as a standard deviation of \(\sigma\).

3. Estimates:

   (a) Use \(a\) and \(b\) to estimate \(\alpha\) and \(\beta\).

   (b) Use \(\sqrt{\frac{\text{SS}_{\text{error}}}{n-2}}\) to estimate \(\sigma\).

4. Hypothesis tests and confidence intervals for \(\beta\).