

Regression of Weaning weight on breast circumference

Model : $y = X\beta + e$

$$y = \begin{bmatrix} 2.61 \\ 2.51 \\ \vdots \end{bmatrix} ; \beta = \begin{bmatrix} \text{intercept} \\ \text{regression coefficient} \end{bmatrix}$$

$$e = \begin{bmatrix} e_1 \\ \vdots \\ e_{10} \end{bmatrix} , X = \begin{bmatrix} 1 & 1.62 \\ 1 & 1.96 \\ \vdots & \vdots \\ 1 & 1 \end{bmatrix}$$

Goal get estimates for unknown β using least squares.

$$\hat{\beta} = (X^T X)^{-1} \cdot X^T y ; \hat{se}_r = \sqrt{\frac{1}{n-2} \sum_{i=1}^n r_i^2}$$

Verify with R : `lm()`