- $Y_i = \beta_0 + \beta_1 X_i + u_i$
- $\hat{Y}_i = \hat{\beta}_0 + \hat{\beta}_1 X_i$
- $\hat{u}_i = Y_i - \hat{Y}_i$
- $SSE = \sum_{i=1}^{n} {\hat{u}_i}^2$
- $\hat{\beta}_0 = \bar{Y} - \hat{\beta}_1 \bar{X}$
- $\hat{\beta}_1 = \dfrac{\sum_{i=1}^{n}(X_i - \bar{X})(Y_i - \bar{Y})}{\sum_{i=1}^{n}(X_i - \bar{X})^2}$
- $E[\hat{\beta}_1] = \beta_1 + corr(X_i, u_i)\frac{\sigma_u}{\sigma_X}$
- $var[\hat{\beta}_1] = \dfrac{\sigma_u^2}{n \times var[X]}$
- $ESS = \sum_{i=1}^{n}(\hat{Y}_i - \bar{Y})^2$
- $TSS = \sum_{i=1}^{n}(Y_i - \bar{Y})^2$
- $SER = \sigma_u = \sqrt{\dfrac{SSE}{n-2}}$