

$$y_i = \underbrace{\beta_0 + \beta_1 \times x_i}_{\text{Linearity}} + \varepsilon_i$$

$$\varepsilon_i \sim \underbrace{\mathcal{N}(0, \sigma^2)}_{\text{Normality}}$$

$$\mathbf{V} = cov = \begin{pmatrix} \sigma^2 & 0 & \dots & 0 \\ 0 & \sigma^2 & \dots & \vdots \\ \vdots & \dots & \sigma^2 & \vdots \\ 0 & \dots & \dots & \sigma^2 \end{pmatrix}$$

Zero covariance
(=independence)

Homogeneity of variance