

$$\begin{aligned}
 \hat{\beta}_2 &= \frac{\sum (X_i - \bar{X})(Y_i - \bar{Y})}{\sum (X_i - \bar{X})^2} \\
 &= \frac{\sum x_i y_i}{\sum x_i^2} \\
 &= \frac{\sum x_i Y_i}{\sum x_i^2}
 \end{aligned}$$

$$\begin{aligned}
 \sum x_i y_i &= \sum x_i (Y_i - \bar{Y}) \\
 &= \sum x_i Y_i - \bar{Y} \sum x_i \\
 &= \sum x_i Y_i, \text{ Since } \sum x_i = \sum (X_i - \bar{X}) = 0
 \end{aligned}$$