

STAT 151A Lecture 7

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Remark 0.1 (Standard Deviation of Residuals)

$$\begin{aligned}\text{SD}(\vec{e}) &= \frac{\|\vec{e} - \bar{e}\vec{1}\|}{\sqrt{n-2}} = \frac{\|\vec{e}\|}{\sqrt{n}} \\ [\text{SD}(\vec{e})]^2 &= \frac{\|\vec{e}\|^2}{n} = \frac{\text{ErrSS}}{n} = \frac{\text{TotSS} - \text{RegSS}}{n} = \frac{\text{TotSS} - r^2(\text{TotSS})}{n} = \frac{(1-r^2)(\text{TotSS})}{n} \\ \text{SD}(\vec{e}) &= \sqrt{1-r^2} \text{SD}(\vec{y})\end{aligned}$$