

Oct 27<sup>th</sup>

evaluate Reg Model

Confidence Interval

$y_i \sim N(5, 25)$  for  $1 \leq i \leq 100$  and  $y_i = \mu + \epsilon$  where  $\epsilon \sim N(0, 25)$

Then the least squares estimator of  $\mu$  (LS = sample mean)  $\hat{\mu} = \frac{1}{n} \sum_{i=1}^n y_i$

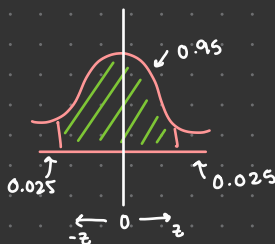
CI:  $[\hat{y} - 1.96(SE(\mu_{LS})), \hat{y} + 1.96(SE(\mu_{LS}))]$

z-value for 95% conf = 1.96

$$SE(\mu_{LS}) = \frac{\sigma}{\sqrt{n}}$$

z-values

$$\int_{-z}^z \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}x^2} dx = 0.95$$



QQ plot

need to check our variable is distributed in the same way a variable following our target distribution.

Constant Variance

We assume that our noise has constant variance

↳ variance w/ respect to x.

• we can plot our fitted values against our residuals (noise estimates)

Extending Linear Model

non constant variance - used in WLS

distribution of error is not normal - used GLM