1

which has lower variance?

which has some
$$V(\bar{y}) = V(\bar{y}) = \frac{1}{n^2} \sum V(y_i)$$

$$= \frac{1}{n^2} \sum \sigma^2 = \frac{1}{n^2} \frac{1}{n^2} \sum V(y_i)$$

$$V(\hat{\theta}_{0}|\theta_{0}) = V(wy + (1-w)M_{0})$$

$$= V(wy)$$

$$= w^{2}V(y)$$

$$= w^{2} \cdot \sigma^{2}$$

$$= v$$

Db has smaller vortance.

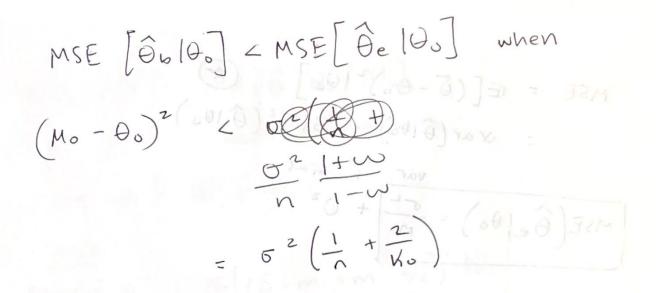
MSE =
$$E[(\tilde{\theta} - \theta_0)^2 | \theta_0]$$

= $Var(\hat{\theta}|\theta_0) + Biai^2(\hat{\theta}|\theta_0)$
 $Var + bias$
 $Var + bias$
 $Var + bias$

MSE
$$(\hat{\theta}_{0} | \theta_{0})$$

TRICK

 $\theta_{0} = \omega \theta_{0} + (1-\omega)\theta_{0}$
 $\omega = \omega \theta_{0} + (1-\omega)\theta_{0}$



Rule of thumb: if prior guess of Mo is within 2 sd of to & we pick Ko=1 m then Bayes estimator probably has lower MSE.

(00-04) (00-04) + (00-0) + (00-0) + (00-0) = (00-04) = (

Frequentist risk

How well does $\widehat{\Theta}$ perform on any across different datasets? function of \widehat{y} $R(\widehat{\theta},\widehat{\Theta}) = \mathbb{E}\left[L(\widehat{\theta},\widehat{\Theta})^{2} \middle| \widehat{\Theta}\right]$

If $L(\theta, \hat{\theta}) = (\hat{\theta} - \theta)^2 + \text{lun} \ R(\theta, \hat{\theta}) = \text{MSE}(\theta, \hat{\theta})$.