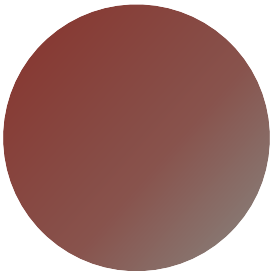
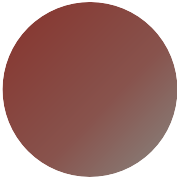


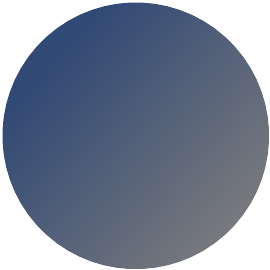
ESTIMATING THE PROPORTION OF RED BALLS





$p = P(\cdot)$ = proportion of red balls

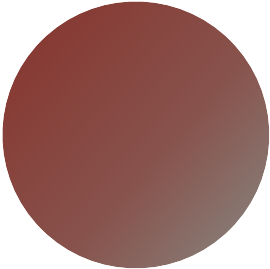


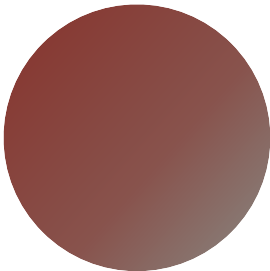












Experiment:

N draws

Data:

$y = \# \text{ red balls}$

$y = 2$

ML estimator:

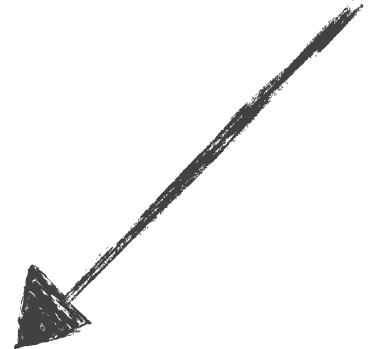
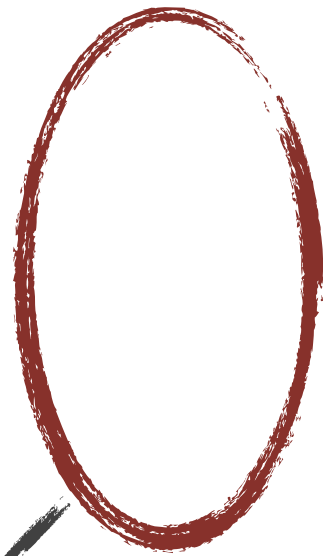
$$p = \frac{y}{N} = \frac{2}{2} = 1$$

Prior information:

There are at least one of
each color ball

Laplace estimator:

$$p = \frac{y + 1}{N + 2} = \frac{2 + 1}{2 + 2} = \frac{3}{4}$$



“Before the experiment, I
observed one of each color ball”

ESTIMATING THE PROPORTION OF RED BALLS

Experiment:

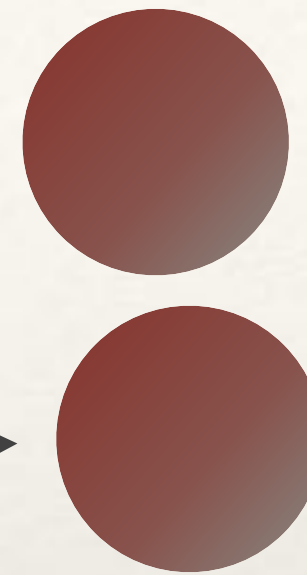
N draws



Data:

$y = \# \text{ red balls}$

$y = 2$



ML estimator:

$$p = \frac{y}{N} = \frac{2}{2} = 1$$

Prior information:

There are at least one of each color ball

Laplace estimator:

$$p = \frac{y + 1}{N + 2} = \frac{2 + 1}{2 + 2} = \frac{3}{4}$$

$p = P(\text{red ball}) = \text{proportion of red balls}$

"Before the experiment, I observed one of each color ball"

WHY USE THE POSTERIOR?
