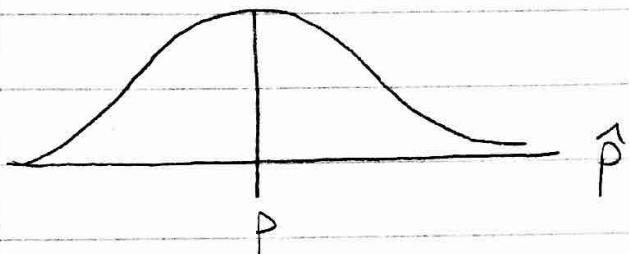


3-25-19

- REGARDLESS OF SAMPLE SIZE, CENTER IS ABOUT THE SAME FOR BOTH DISTRIBUTIONS.
- STD DEVIATION, HOWEVER, GETS SMALLER AS THE SAMPLE SIZE INCREASES.



- THE MEAN OF THE \hat{p} 'S IS ALWAYS CLOSE TO p .

$$\Rightarrow \mu_{\hat{p}} = p$$

- LOOKING @ THE STD DEV'S AMONG THE SAMPLES:

$$\sigma_{\hat{p}} = \sqrt{\frac{p(1-p)}{n}} \quad \text{WHERE } 1-p = q$$

CENTRAL LIMIT THEOREM for Sample Proportions

→ SAMPLE DISTRIBUTIONS OF SAMPLE PROPORTIONS ARE APPROXIMATELY NORMAL WITH A MEAN $\mu_{\hat{p}}$

& STD DEV $\sigma_{\hat{p}}$ WHENEVER:

$$np \geq 10 \quad \text{AND} \quad n(1-p) \geq 10$$

5

→ IS THE SAMPLE LARGE ENOUGH?

→ IS THE SAMPLE GOOD ENOUGH? RANDOM & UNBIASED

Know For Quiz!!!
 (SAMPLES) (POPULATION) ↗
 3-25-19

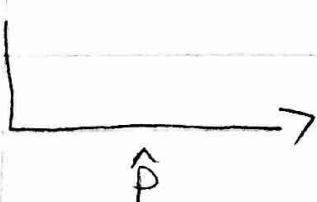
	<u>STATISTICS</u>	<u>PARAMETERS</u>
MEAN	\bar{x}	μ * WE USE \bar{x} TO EST. μ
STD DEV	s	σ * WE USE s TO EST. σ
SIZE	n	N
PROPORTION	\hat{p}	p * WE USE \hat{p} TO EST. p .

ESTIMATING STUFF IN THE POPULATION

- DOES EVERY SAMPLE LOOK ALIKE?
 - NO, NOT EXACTLY THE SAME
 - BUT IF DONE RIGHT; YOU GET SIMILAR RESULTS
- HOW MUCH VARIATION CAN WE EXPECT?
 ↳ LARGER SAMPLES PROVIDE MUCH LESS VARIATION AND APPROACHES THE TRUE MEASURES OF THE POPULATION

DISTRIBUTION OF SAMPLE PROPORTIONS (\hat{p})

- THE X-AXIS OF OUR SAMPLE PROPORTIONS



- LESS VARIATION BETWEEN SAMPLES IF n IS LARGER
- DISTRIBUTION LOOKS NORMAL