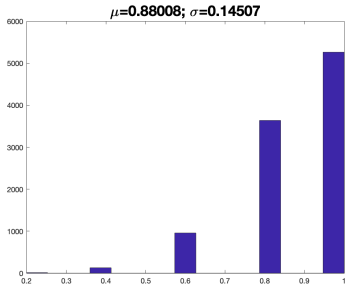
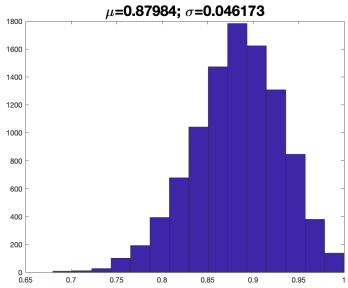
MAT1372, Classwork16, Fall2025

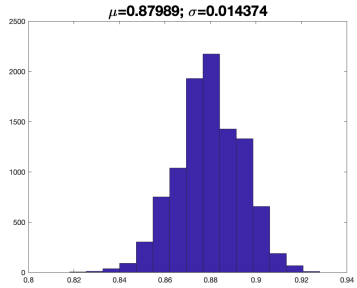
5.1 Point Estimates and Sampling Variability(Conti.)

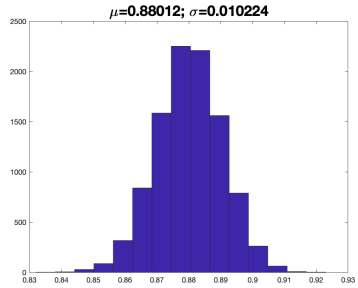
8. What happens if the success-failure condition isn't satisfied?

If we do the simulations by executing the code when $p = 0.88$ with different sample size n:









$n = 5$	$n = 50$	$n = 500$	$n = 1000$
$np =$ 4.4 <10	$np =$ 44 ≥ 10	$np =$ 440 ≥ 10	$np =$ 880 ≥ 10
$n(1-p) =$ 0.6 <10	$n(1-p) =$ 6 <10	$n(1-p) =$ 60 ≥ 10	$n(1-p) =$ 120 ≥ 10

9. What do you observe the trend when n varies?

For the skewness and discreteness of the distributions, we have

(1) When either np or n(1 − p) is small, the distribution is more discrete (or not continuous)

(2) When np or n(1 − p) is smaller than 10, the skew in the distribution is more noteworthy

(3) The larger both np and n(1−p), the more normal the distribution. This may be a little harder to see for larger sample size

(4) When np and n(1 − p) are both very large, the distribution's discreteness is hardly evident, and it looks much more like a normal distribution

For the mean and standard error of the distributions, we have

(1) _____

(2) _____

5.2 Confidence Intervals for a Proportion

1. Confidence Interval and Confidence Level.

2. Constructing a 95% Confidence Level.

The Center of the interval: _____

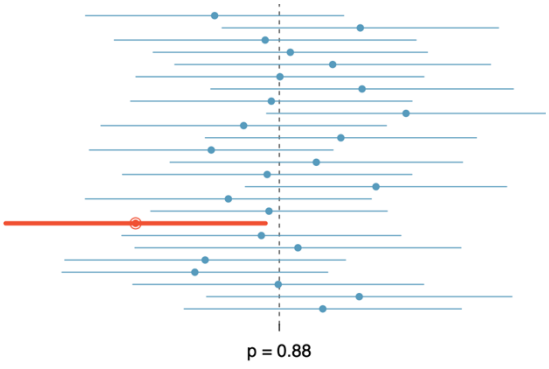
The size of the interval: _____

Build the interval: _____

point estimate $\pm 1.96 \times SE$ =

Why $1.96 \times SE$? _____

3. What does "95% confident" mean?



4. In Section 5.1 we learned that about 88.7% of a random sample of 1000 American adults supported solar power. Compute and interpret a 95% confidence interval for the population proportion.