How do we find p?

$p=\frac{x}{n}$ (can be expressed as fraction or decimal)

How do we find x?

x is typically the number something is occuring out of n times

How do we find n?

n is typically the number of trials or things available

How do we find q?

$q=1-p$ (can be expressed as fraction or decimal)

q is the complement of p

What is α?

α is called alpha

α represents the area in BOTH tails of a confidence interval

What is $\frac{\alpha}{2}$?

$\frac{\alpha}{2}$ is the area in ONE of the two tails

How do we find α?

100% −Confidence level

So for a 95% confidence level we have 100%−95% = 5%

This means that 5% or 0.05 lies in BOTH tails combined!

How do we find $\frac{\alpha}{2}=0.5\alpha$?

$$\frac{\alpha}{2}=\frac{100\% - \text{Confidence level}}{2}$$

So for a 95% confidence level

we have $\frac{\alpha}{2}=\frac{100\%-95\%}{2}=\frac{5\%}{2}$

This means that $\frac{\alpha}{2}=2.5\%$ or $\frac{\alpha}{2}=0.025$ lies in EACH tail!

How do we find $z_{0.5\alpha}$ a.k.a critical value CV?

$$CV = \pm \text{invnorm}\left(\frac{\alpha}{2}, 0, 1\right)$$

This gives the "X" values that will give us our confidence level (area in the middle)

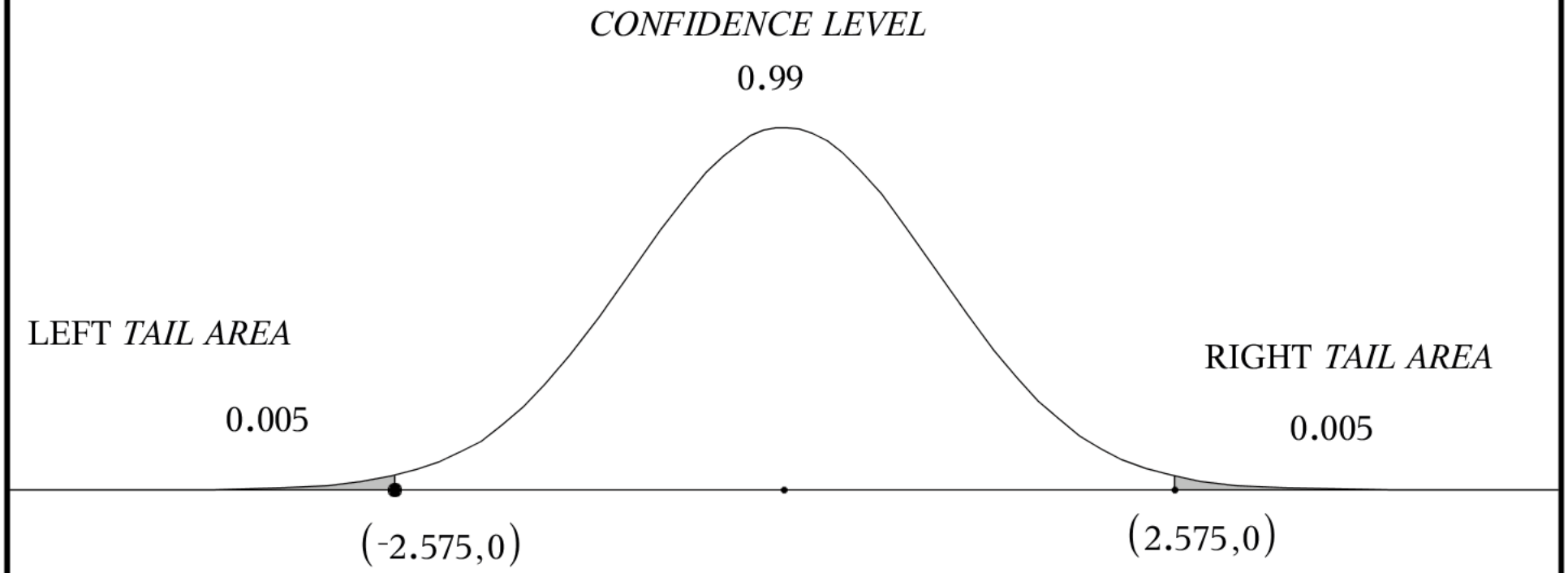
KNOW THE "FAMOUS" CRITICAL VALUES

CV for 90% =1.645

CV for 95% =1.96

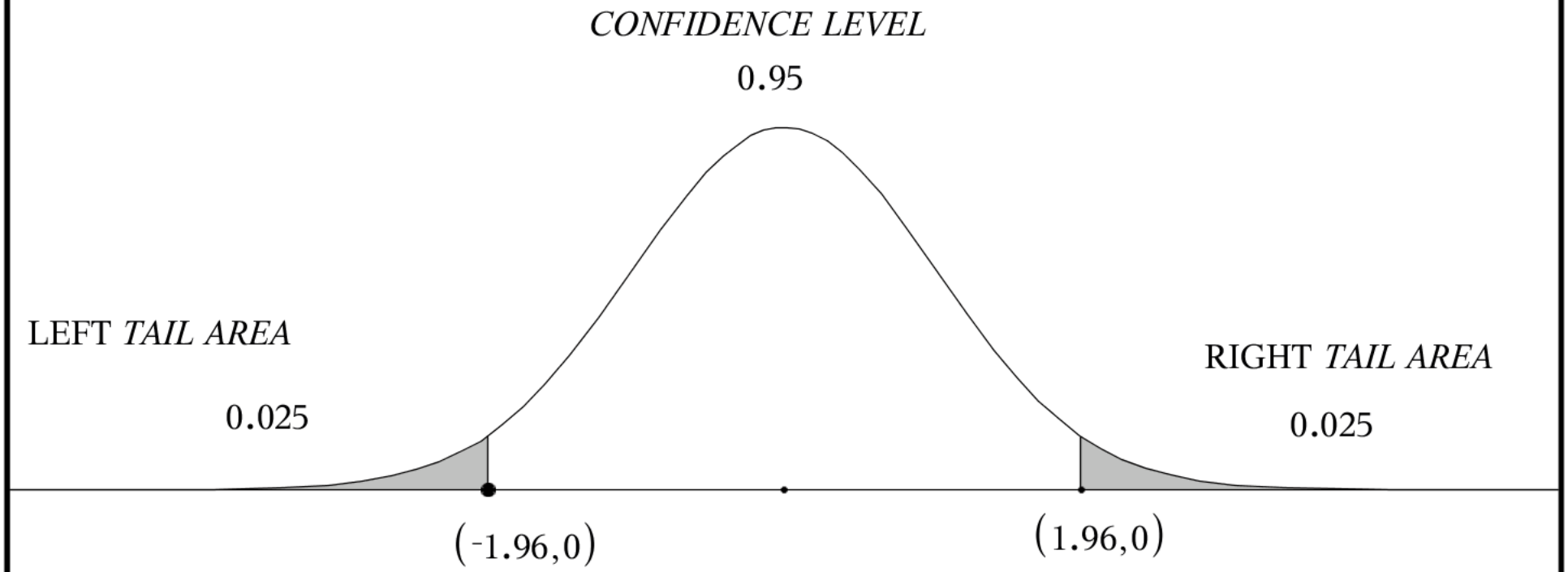
CV for 99% =2.575

Problem 1



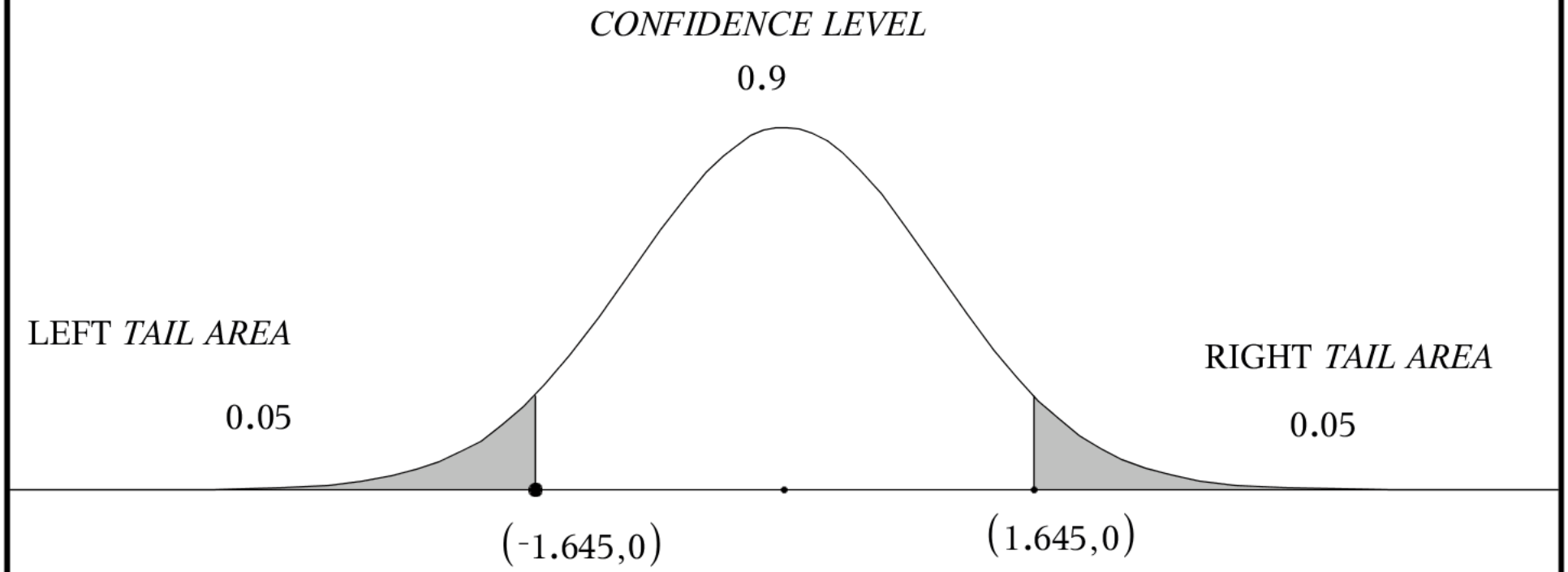
α 0.01 $\frac{\alpha}{2}$ 0.005 CV $\pm$ 2.575

Problem 1



α 0.05 $\frac{\alpha}{2}$ 0.025 CV $\pm$ 1.96

Problem 1



$\alpha \quad 0.1 \qquad \frac{\alpha}{2} \quad 0.05 \qquad CV \quad \pm \quad 1.645$

Margin of Error

$$E = z_{\frac{\alpha}{2}} \sqrt{\frac{pq}{n}}$$

Margin of Error for confidence intervals for p

$$E = CV \cdot \sqrt{\frac{pq}{n}}$$