Descriptive

Inferential

point estimate

Confidence Level

90% 95% 99%

Confidence Interval

$8 < \mu < 10$

95 % confident that the mean lies between 8 and 10

$$E = z_{\alpha/2}\sqrt{\frac{\hat{p}\hat{q}}{n}}$$

$$\frac{200}{400}$$

$\hat{p} = .5$

$\hat{q} = .5 \quad 1-\hat{p}$

$$p \pm E$$

p 360 Mean

σ known
normally distributed

z

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

$\bar{x}$ sample mean

$\bar{x} \pm E$

$< \mu <$

σ known
not normal
$n > 30$
use z

σ known
not normal
$n \leq 30$

Mean

σ not known

normal

t

σ not known

not normal

$n > 30$

t

σ not known

$n \le 30$

not normal

can't do

$$E = t_{\frac{\alpha}{2}} \frac{s}{\sqrt{n}}$$

σ pop st dev.

s sample st dev

$$df = n-1$$

St. Dev

Variance

$\frac{\alpha}{2}$

χ^2

Variance $$\frac{(n-1)s^2}{\chi^2_R} < \sigma^2 < \frac{(n-1)s^2}{\chi^2_L}$$

St. Dev. $$\sqrt{\frac{(n-1)s^2}{\chi^2_R}} < \sigma < \sqrt{\frac{(n-1)s^2}{\chi^2_L}}$$

Sample Size

proportion

$\hat{p}$ unknown .5

$\hat{q}$ unknown .5

$$n = \frac{\left(Z_{\alpha/2}\right)^2 \hat{p}\hat{q}}{E^2}$$

Mean $\left[\frac{Z_{\alpha/2}\,\sigma}{E}\right]^2$