Confidence Intervals

Proportion

$$\hat{p} - E < p < \hat{p} + E$$

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

Variance / Standard Deviation

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

Mean

$$\bar{x} - E < \mu < \bar{x} + E$$

σ known

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

σ unknown

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

Hypothesis Testing

The only thing that changes is the test statistic.

Proportion

$$z = \frac{\hat{p} - p}{\sqrt{\frac{pq}{n}}}$$

Mean

σ known

$$z = \frac{\hat{x} - \mu}{\frac{\sigma}{\sqrt{n}}}$$

σ unknown

$$t = \frac{\hat{x} - \mu}{\frac{s}{\sqrt{n}}}$$

Variance / Standard Deviation

$$\chi^2 = \frac{(n - 1)\, s^2}{\sigma^2}$$