1 sample
Sample mean vs Population Mean

2 sample
Two sample means against each other

Known σ?

$$Z = \frac{\bar{X} - \mu}{\sigma/\sqrt{n}}$$

Large n?

$$Z = \frac{\bar{X} - \mu}{s/\sqrt{n}}$$

$$T = \frac{\bar{X} - \mu}{s/\sqrt{n}}$$

$$\nu = n - 1$$

Paired data?

$$d_i = x_{2,i} - x_{1,i}$$

$$T = \frac{\bar{D}}{s_{\bar{D}}}$$

$$\nu = n - 1$$

$$\bar{Y} = \bar{X}_2 - \bar{X}_1$$

$$s_{\bar{Y}} = \sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}$$

$$T = \frac{\bar{Y}}{s_{\bar{Y}}}$$

Similar σ?

$$\nu = n_1 + n_2 - 2$$

$$\nu = \frac{\left(s_{\bar{X}_1}^2 + s_{\bar{X}_2}^2\right)^2}{\dfrac{s_{\bar{X}_1}^4}{n_1 - 1} + \dfrac{s_{\bar{X}_1}^4}{n_2 - 1}}$$