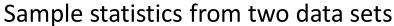
Comparison of Means Scheme



Sample statistics from two data sets
$$\overline{X}_{I}, n_{I}, S_{I}^{2} \quad \text{and} \quad \overline{X}_{2}, n_{2}, S_{2}^{2}$$

$$\text{variance equal?}$$

$$\text{sample statistics from two data sets}$$

$$\sigma_{I}^{2}, n_{2}, S_{2}^{2}$$

$$\sigma_{I}^{2} = \sigma_{2}^{2}? \quad \text{no}$$

$$\text{variance equal?}$$

$$\text{sample statistics from two data sets}$$

$$\sigma_{I}^{2}, n_{2}, S_{2}^{2}$$

$$\text{variance equal?}$$

$$\text{sample statistics from two data sets}$$

$$\sigma_{I}^{2}, n_{2}, S_{2}^{2}$$

$$\text{no}$$

$$\text{variance equal?}$$

$$\text{sample statistics from two data sets}$$

$$\sigma_{I}^{2}, n_{2}, S_{2}^{2}$$

$$\text{variance equal?}$$

$$\text{sample statistics from two data sets}$$

$$\sigma_{I}^{2}, n_{2}^{2}$$

$$\text{variance equal?}$$

$$\text{equal?}$$

$$\text{equal?}$$

$$\text{equal?}$$

$$\text{equal?}$$

$$\text{no}$$

$$\text{ves}$$

$$\text{no}$$

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$$\text{variance equal?}$$

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For the two variance unknown but equal cases, the pooled sample variance (S_p^2) is given by:

$$S_p^2 = \frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}$$

and we compare the test statistic (T_0) to the t distribution with n_1+n_2-2 degrees of freedom.

For the two T_0^* cases (variance unknown and unequal), the degrees of freedom (ν) are given by:

$$v = INT \left[\frac{\left(\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}\right)^2}{\frac{\left(s_1^2/n_1\right)^2}{n_1 - 1} + \frac{\left(s_2^2/n_2\right)^2}{n_2 - 1}} \right]$$

and we compare the test statistic (T_0^*) to the t distribution with ν degrees of freedom.