Conditions

Independent Samples t-test

Is there any evidence that leadership style (as measured by the amount of controlling behavior) differs between principals in urban and rural areas in Oromia? Data are provided in a Table below.
Urban
Mean = 78.6 Standard deviation = 16.70 N= 9
Rural
Mean = 69.10 Standard deviation = 19.31 N= 10

Solution

For this test, the null hypothesis is that the means of samples are equal:

$$H_0: M_1 = M_2$$

$$H_a: M_1 \neq M_2$$

$$t = \frac{\bar{X}_1 - \bar{X}_2}{S_{X_1X_2}\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}},$$

$$S_{X_1X_2} = \sqrt{\frac{1}{2}\left(S_{X_1}^2 + S_{X_2}^2\right)}$$

$$S_{X_1}^2 = \frac{\sum_{i=1}^{6}(X_1 - \bar{X}_1)^2}{n}$$

$$S_{X_2}^2 = \frac{\sum_{i=1}^{6}(X_2 - \bar{X}_2)^2}{n}$$

For this example:

$$t = 1.145347$$

The degrees of freedom:

$$k = 9 + 10 - 2 = 17$$

For these degrees of freedom the t-criteria value is:

2.1098– for p=0.95

We can make a conclusion, that with probability 95% there is no difference between 2 groups. H0 is approved