

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\left(\frac{(N_1 - 1)s_1^2 + (N_2 - 1)s_2^2}{N_1 + N_2 - 2}\right)\left(\frac{1}{N_1} + \frac{1}{N_2}\right)}}$$

Social Science Statistics

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T-Test Calculator for 2 Independent Means

This simple *t*-test calculator, provides full details of the t-test calculation, including sample mean, sum of squares and standard deviation.

T-Test Calculator

Further Information

A *t*-test is used when you're looking at a numerical variable - for example, height - and then comparing the averages of two separate populations or groups (e.g., males and females).

Requirements

- Two independent samples
- Data should be normally distributed
- The two samples should have the same variance

Null Hypothesis

H0: $\mu_1 - \mu_2 = 0$, where μ_1 is the mean of first population and μ_2 the mean of the second.

As above, the null hypothesis tends to be that there is no difference between the means of the two populations; or, more formally, that the difference is zero (so, for example, that there is no difference between the average heights of two populations of males and females).

Equation

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\left(\frac{(N_1 - 1)s_1^2 + (N_2 - 1)s_2^2}{N_1 + N_2 - 2}\right)\left(\frac{1}{N_1} + \frac{1}{N_2}\right)}}$$

Take me to the calculator!