

12.8: Correlated t Simulation

Learning Objectives

- State the effect of increasing r on power

Instructions

This simulation demonstrates the t test for correlated observations. When you click the "sample" button, 12 subjects with scores in two conditions are sampled from a population. Each population is normally distributed with a standard deviation of 4. The mean for condition 1 is 15 and the mean for condition 2 is 13. The initial population correlation between conditions is 0.5, although you can change that. The data from the sample of 12 subjects is graphed with a line connecting the two data points for a subject. The difference scores (Condition A - Condition B) are computed and graphed as well and shown in a table. The bottom of simulation displays the mean difference score, the standard deviation of the difference scores, the standard error of the mean difference score, the value of t , and the value of p .

Illustrated Instructions

Video Demo

The video begins by running simulations with the population correlation set to 0.5. More simulation are run with the correlation set to 0.1. As you watch the video and run simulations for yourself see if you can determine a correspondence between an aspect of the graph and the standard deviation of the difference scores. Specifically, look at the degree to which the lines diverge from being parallel and the standard deviation. What effect does increasing the correlation have on the parallel lines and the standard deviation? What effect does increasing the correlation have?

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