

Did I Get This? Confidence Intervals – Paired Samples

A publishing company wanted to test whether typing speed differs when using word processor A or word processor B.

A random sample of 25 typists was selected and the typing speeds (in words per minute) were recorded for each secretary when using word processor A and then when using word processor B. (Which word processor was used first was determined for each typist by a coin flip).

Based on the collected data, a 95% confidence interval for μ_d , the mean difference (word processor A - word processor B) was found to be (2.5, 7.8).

The appropriate hypotheses for testing whether the typing speeds differ when using word processor A or word processor B is the two-sided test:

$$H_0: \mu_d = 0$$

$$H_a: \mu_d \neq 0$$

Question 1:

Based on this confidence interval for μ_d , what would be your conclusion (at the .05 significance level)? Explain.

Your answer

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Since 0 (our null value) falls outside the 95% confidence interval, we can reject H_0 (at the 0.05 significance level), and conclude that the typing speeds differ when using processor A or B.

Question 2:

Interpret the 95% confidence interval in context. Make sure that your interpretation quantifies the effect that the type of word processor used (the explanatory variable, X) has on the typing speed (the response variable, Y).

Your answer

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We are 95% confident that the population mean typing speed using word processor A is between 2.5 and 7.8 more words per minute than that for word processor B.