Supplement J: Report writing for Paired samples t-test

A report on a paired samples *t*-test should include:

- Introduction, including the alternative hypothesis for the study
- Sample description, including the nature of the samples, the total number of participants and the mean and standard deviation of each sample
- Comparison of sample means
- Difference significant or not significant, quoting M_D, s_D, t, df and p
- 95% confidence interval interpretation, quoting relevant values
- Conclusion which relates back to alternative hypothesis

Note: **Paired samples *t*-test** is another name for **a related samples *t*-test**

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Example 1:

A university lecturer predicted that there is a difference in the average amount of sleep students taking her unit have per night on weeknights and the amount of sleep they have per night on weekends. The results shown below were produced using SPSS.

Does this data provide sufficient evidence to conclude there is a difference in the average amount of sleep students in the lecturer's unit have per night on weeknights and on weekends? Write a report on the results of this study, testing at an alpha level of .05

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Weeknight sleep	7.5690	29	.97947	.18188
	Weekend sleep	8.0862	29	2.00922	.37310

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Weeknight sleep - Weekend sleep	-.5172	1.9752	.36679	-1.26857	.23409	-1.410	28	.169

Report

A university lecturer predicted that there is a difference in the average amount of sleep students taking her unit have per night on weeknights and the amount of sleep they have per night on weekends.

For a random sample of 29 students taking the lecturer's unit, the average amount of sleep they had per night on weeknights (M = 7.57 hours, s = 0.98 hours) was lower than the average amount of sleep they had per night on weekends (M = 8.09 hours, s = 2.01 hours), however a paired samples t-test shows this difference in mean number of hours sleep per night (M_D = 0.52, s_D = 1.98) is not significant, $t(28) = 1.41$, p = .169. The 95% confidence interval indicates that the average amount of sleep students in the lecturer's unit have per night is between 1.27 hours less and 0.23 hours more on weeknights than on weekends.

There is no evidence to suggest any difference in the average amount of sleep students taking the lecturer's unit have per night on weeknights and weekends.

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Example 2:

A nutritionist believes Australian adults consume fewer serves of fruit per day, on average, than serves of vegetables per day. A random sample of Australian adults was recently obtained and their daily fruit and vegetable consumption was recorded. The results shown below were produced using SPSS.

Does this data provide sufficient evidence to conclude that on average Australian adults consume fewer serves of fruit per day than serves of vegetables per day?

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Number of serves of Fruit per day	1.61	2000	1.200	.027
	Number of serves of Vegetables per day	2.51	2000	1.384	.031

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Number of serves of Fruit per day - Number of serves of Vegetables per day	-.898	.690	.015	-.928	-.867	-58.162	1999	.000

Report

A nutritionist believes that Australian adults consume fewer serves of fruit per day, on average, than serves of vegetables per day.

For a random sample of 2000 Australian adults, the average number of serves of fruit consumed per day (M = 1.61, s = 1.20) was lower than the average number of serves of vegetables consumed per day (M = 2.51, s = 1.38) and a paired samples t-test shows this difference in mean number of serves consumed (M_D = 0.90, s_D = 0.69) is significant, $t(1999) = 58.16$, $p < .001$. The 95% confidence interval shows that the average number of serves of fruit consumed daily by Australian adults is between 0.87 and 0.93 serves lower than the average number of serves of vegetables they consume daily.

As expected, Australian adults consume fewer serves of fruit per day, on average, than serves of vegetables per day.