



R TUTORIAL:

PAIRED SAMPLES t & WILCOXON SIGNED RANKS TESTS

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parametric analysis for within-subjects designs

PAIRED SAMPLES t TEST

COMPARE MEANS

Conduct a test to compare the means of two variables within a data file.

If $p > \alpha$, the t test is not significant and the null hypothesis should be retained.

Example Syntax

```
t.test(dataTABLE$VARIABLE,dataTABLE$VARIABLE,paired=TRUE)
```

Syntax Elements

- **Function** : `t.test` (with `paired=TRUE`)
 - ❖ Tells *R* to calculate an paired samples (dependent) *t* test to compare the means of two variables

```
> t.test(mydata$Var1,mydata$Var2, paired=TRUE)
```

```
Paired t-test
```

```
data: mydata$Var1 and mydata$Var2
```

```
t = -7.5309, df = 49, p-value = 1.003e-09
```

```
alternative hypothesis: true difference in means is not equal to 0
```

```
95 percent confidence interval:
```

```
-0.6155390 -0.3562285
```

```
sample estimates:
```

```
mean of the differences
```

```
-0.4858838
```

nonparametric analysis for within-subjects designs

WILCOXON SIGNED RANKS TEST

COMPARE RANKS

Conduct a test to compare the ranks of the observations on two variables within the data file.

If $p > \alpha$, the test is not significant and the null hypothesis should be retained.

Example Syntax

```
wilcox.test(dataTABLE$VARIABLE,dataTABLE$VARIABLE,paired=TRUE)
```

Syntax Elements

- **Function** : `wilcox.test` (with `paired=TRUE`)
 - ❖ Tells *R* to calculate a Wilcoxon Signed Ranks test to compare the ranks of the observations of the variable across two variables

```
> wilcox.test(mydata$Var1,mydata$Var2, paired=TRUE)

      Wilcoxon signed rank test with continuity correction

data:  mydata$Var1 and mydata$Var2
V = 96, p-value = 1.766e-07
alternative hypothesis: true location shift is not equal to 0
```