

Test of Hypothesis

Paired Samples

Problem 1) A course is intended *to increase* the self-confidence of company's employees. A random sample of seven employees was evaluated for their self-confidence salesperson before and after this course.

The following table shows the measured of self-confidence scores before and after this course:

Before	8	5	4	9	6	9	5	
After	10	8	5	11	6	7	9	
d=A - B								$\Sigma d =$ $\bar{d} =$ $s_d =$

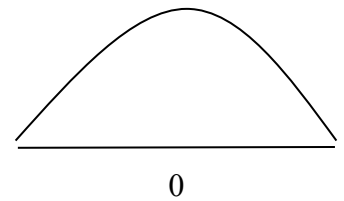
Using the 5% significance level, can you conclude that attending this course increases the self-confidence of company's employees?

SC: After the course the

$H_0 :$

OC.: After the course the

$H_1 :$



CV = $t =$

$$\text{Test Statistic} = ts = t = \frac{\sqrt{n}(\bar{d} - \mu_d)}{s_d} =$$

Conclusion: Accept or reject H_0 ?

Comment: Accept or reject SC?

Problem 2) A company claims that its 12-week special exercise program significantly reduces weight. A random sample of six persons was selected, and these persons were put on this exercise program for 12 weeks.

The following table gives the weight (in pounds) of these six persons before and after the program.

Before	180	195	177	221	208	199	
After	183	187	161	204	197	189	
d=A - B							$\Sigma d =$ $\bar{d} =$ $s_d =$

Using the 1% significance level, can you conclude that attending this exercise program reduces the weight of participants?

SC: After the course the

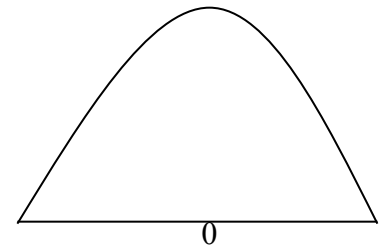
$H_0 :$

OC: After the course the

$H_1 :$

CV = $t =$

$$\text{Test Statistic} = t =$$



Conclusion: Accept or reject H_0 ?

Comment: Accept or reject SC?

Paired Samples

Problem 1)

Before	8	5	4	9	6	9	5	
After	10	8	5	11	6	7	9	
d=A - B	2	3	1	2	0	-2	4	$\Sigma d = 10 \quad \bar{d} = 1.429 \quad s_d = 1.988$

μ_d = Average increase in self- confidence

SC: After the course the self-confidence of company's employees increases.

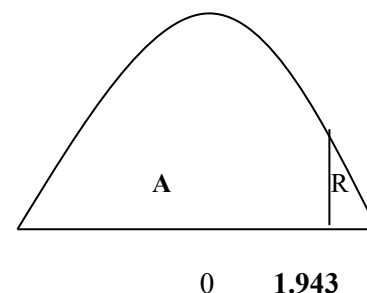
CC.: After the course the self-confidence of company's employees **does not increase or remains the same**.

SC: $\mu_d > 0$ Ho: $\mu_d \leq 0$

OC: $\mu_d \leq 0$ H₁ : $\mu_d > 0$

CV (From Table 2) $t = 1.943$

$$TS = t = \frac{\sqrt{n}(\bar{d} - \mu_d)}{s_d} = \frac{\sqrt{7}(1.429 - 0)}{1.988} = 1.90 \Rightarrow \text{Falls outside CR}$$



Conclusion: Accept Ho

Comment: After the course the self-confidence of company's employees does not increase or remains the same.

Problem 2)

Before	180	195	177	221	208	199	
After	183	187	161	204	197	189	
d=A - B	3	-8	-16	-17	-11	-10	$\Sigma d = -59 \quad \bar{d} = -9.833 \quad s_d = 7.19$

Average weight loss = μ_d

SC: This exercise program reduces the weight of participants?

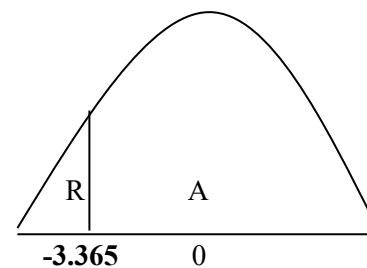
OC: This exercise program does not reduce the weight of participants?

SC: $\mu_d < 0$ Ho: $\mu_d \geq 0$

OC: $\mu_d \geq 0$ H₁ : $\mu_d < 0$

CV (From Table 2) $t = -3.365$

$$TS = t = \frac{\sqrt{n}(\bar{d} - \mu_d)}{s_d} = \frac{\sqrt{6}(-9.833 - 0)}{7.19} = -3.349 \Rightarrow \text{Falls outside CR}$$



Conclusion: Accept Ho

Comment: This exercise program does not reduce the weight of participants?