

Name: KEY

30 pts

Quiz 3 WHITE

Stat 244

Winter 2012

February 9

115

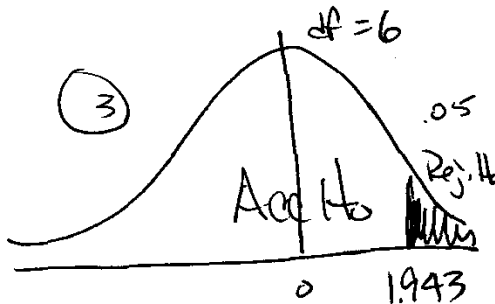
1. Seven people are asked to rate a product, before and after seeing an advertisement. At the 5% level of significance, is there evidence that the ratings are higher after seeing the ad?

Before	After	(A-B)
2	3	1
2	4	2
3	6	3
3	8	5
3	8	5
4	4	0
4	2	-2

$[I\&A] = A - B$

Draw and label the curve denoting the decision rule:

$$\begin{cases} H_0: \mu_D \leq 0 \\ H_a: \mu_D > 0 \end{cases}$$



Test stat:

$$\text{Test stat} = \frac{2 - 0}{2.552/\sqrt{7}} = 2.05$$

$\bar{d} = 2$

$s_d = 2.552$

Decision (Accept or Reject H_0): Reject H_0 .

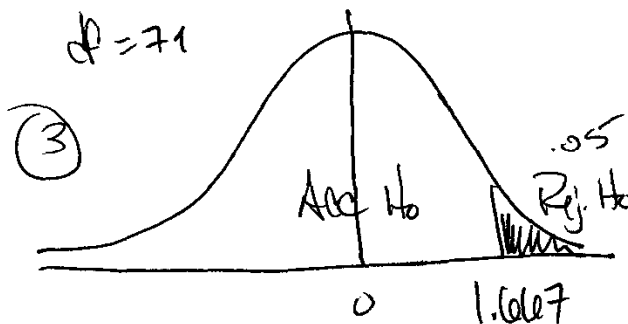
Interpretation: The ratings were higher after seeing the ad.

pvalue: $.025 < p\text{-val} < .05$

2. In a larger study, 40 people who have seen the ad give the product an average rating of 7.2, with a standard deviation of 2.6. Fifty people who haven't seen the ad give it an average rating of 5.7, with a standard deviation of 2. At the 5% level of significance, is there evidence that the ratings are higher after seeing the ad? [1 = ad 2 = no ad]

$$\begin{cases} H_0: \mu_1 \leq \mu_2 \\ H_a: \mu_1 > \mu_2 \end{cases}$$

Draw and label the curve denoting the decision rule:



Test stat: $7.2 - 5.7 = 3.01$

$$\text{Test stat} = \frac{7.2 - 5.7}{\sqrt{\frac{2.6^2}{40} + \frac{2^2}{50}}}$$

Decision (Accept or Reject H_0): Reject H_0

Interpretation: Ratings are higher when ad is seen

pvalue: (.0018 from calc.) $p\text{-val} < .005$

30 pts.

Quiz 3 BLUE

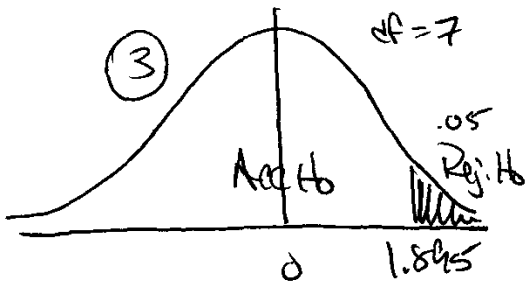
- 15 1. Eight people are asked to rate a product, before and after seeing an advertisement. At the 5% level of significance, is there evidence that the ratings are higher after seeing the ad?

Before	After	(A-B)
2	3	1
2	4	2
3	6	3
3	8	5
3	8	5
3	9	6
4	4	0
4	2	-2

$[A-B]$

Draw and label the curve denoting the decision rule:

3 $H_0: \mu_D \leq 0$
 $H_a: \mu_D > 0$



3 Test stat: $\frac{2.5 - 0}{2.777/\sqrt{8}} = 2.55$

$\bar{d} = 2.5$
 $s_d = 2.777$

3 Decision (Accept or Reject H_0): Reject H_0

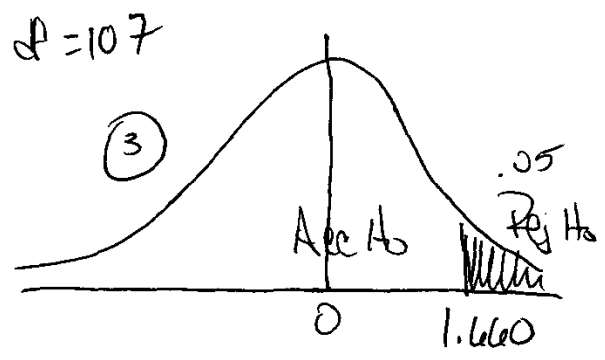
3 Interpretation: The ratings were higher after seeing the ad.

3 pvalue: .01 < pval < .025 (0.0192 from calc.)

- 15 2. In a larger study, 60 people who have seen the ad give the product an average rating of 7.2, with a standard deviation of 2.6. Fifty people who haven't seen the ad give it an average rating of 5.7, with a standard deviation of 2. At the 5% level of significance, is there evidence that the ratings are higher after seeing the ad? [1 = ad 2 = no ad]

3 $H_0: \mu_1 \leq \mu_2$
 $H_a: \mu_1 > \mu_2$

Draw and label the curve denoting the decision rule:



3 Test stat: $\frac{7.2 - 5.7}{\sqrt{\frac{2.6^2}{60} + \frac{2^2}{50}}} = 3.42$

3 Decision (Accept or Reject H_0): Reject H_0

3 Interpretation: Ratings are higher when ad is seen.

3 pvalue: (.00045 from calc.) $pval < .005$