\$ 102

Statistics (2)

Quiz-1

Date: Apr. 17, 2018

Name:

ID:

Decision

1. A researcher claim that there is a difference in the distance of travelling to school between day students and evening students. Two random samples are taken, and the data are shown.

(a) Find the 95% confidence interval of the difference in the means.

Day	Evening	
students	students	
$\overline{x}_1 = 4.7$	$\bar{x}_2 = 6.2$	
$S_1 = 1.5$	$S_2 = 1.7$	
$n_1 = 12$	$n_2 = 16$	

(b) At 0.05 significant level, test the claim.

a.
$$(\bar{x}_1 - \bar{x}_2) \pm t$$
. $\sqrt{\frac{Sr}{n_1} + \frac{G^2}{n_2}}$

b) $H_0: \mathcal{U}_1 = \mathcal{U}_2$
 $H_1: \mathcal{U}_1 \mp \mathcal{U}_2 \text{ (claim)}$
 $f=11$
 $f=$

$$\Theta = 0.05$$
, df=11
 $CV \Rightarrow t = 2.201$

3 3
$$\hat{T} = (\bar{X}_1 - \bar{X}_2) / \sqrt{\frac{S_1^2 + S_2^2}{n_1}} = -2.47$$

rej. Ho. @ Summary.

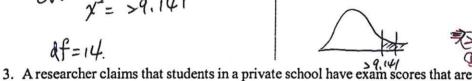
有路和证据支持

2. The manager of a large company claims that the standard deviation of the time (in minutes) that it takes a telephone call to be transferred to the correct office in her company is 1.2 minutes or less. A random sample of 15 calls is selected, and the calls are timed. The standard deviation of the sample is 1.8 minutes. At $\alpha = 0.01$, test the claim that the standard deviation is less than or equal to 1.2 minutes. Use the P-value method.

> (Ho:
$$\sigma^2 > 1.2$$
 (claim)
> (Y: $\sigma^2 > 1.2$ CV: $\chi^2 = >9.141$

test value:

$$\gamma \chi^{2} = \frac{(n-1)S^{2}}{G^{2}} = 31.5$$



Dreject Ho. 2.0 多种意义

AL YOUR DINE	BUT P STATE
Private School	Public School
$\bar{x}_1 = 112$	 x 2=104
$\sigma_1=15$	σ ₂ =15
n ₁ =60	n ₂ =60

$$\frac{3}{3} = \frac{(\bar{x}_1 - \bar{x}_2) - 6}{\sqrt{\frac{51^2}{h_1} + \frac{52}{h_2}}} = 0.73$$

@ Decision: Vreject Ho

⑤ 点足夠記稅 記明多环有毁.

4.) Upright vacuum cleaners have either a hard body type or a soft body type. Shown are the weights in pounds of a random sample of each type. Assume the variable is normally distributed.

(a) At $\alpha = 0.05$, can it be concluded that the means of the weights are different?

at most 6 points higher than those of students in public schools. Random samples of 60 students from each type of school are selected and given an

exam. The results are shown. At $\alpha = 0.05$, test the claim.

(b) Find the 95% confidence interval for the difference of the means.

Hard types		Soft types			
21	18	23	14	13	11
20	16	17	13	12	15
Mean = 18		Me	an =	13	
Variance $= 4.5$		Variance = 2.5			

95% CI.	(2.571)
$\mathcal{G}(\widehat{X}_1 - \widehat{X}_2)$	$\pm \frac{1}{N} \cdot \sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}$
3 (2.>>4	7,776)

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2 + s_2^2}{n_1 + n_2}}} = 4.63$$

(18)

5. In a random sample of 80 Americans, 44 wished that they were rich. In a random sample of 100 Europeans, 46 wished that they were rich. At $\alpha = 0.02$, is there a difference in the proportions? Find the 98% confidence interval

for the difference of the two proportions.

$$P_1 = 44 \\
80 = 255$$

$$P_2 = 0.46$$

$$P_3 = 46 + 44 \\
100 + 100$$

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6. A U.S. Web Usage Snapshot indicated a monthly average of 36 Internet visits a particular website per user form home. A random sample of 25 Internet users yielded a sample mean of 42.1 visits with a standard deviation of 5.3.

At the 0.01 level of significance, can it be concluded that this differs from the national average?

7. A survey by *Men's Health* magazine stated that 15% of men said they used exercise to reduce stress. Use α=0.10. A random sample of 100 men was selected, and 10 said that they used exercise to relieve stress. Use the *P*-value method to test the claim. Could the results be generalized to all adult Americans?

8. A doctor is interested in determining whether a film about exercise will change six persons' attitudes about exercise. The results of his questionnaire are shown. A higher numerical value shows a more favorable attitude toward exercise. Is there enough evidence to support the claim, at α = 0.05, that there was a change in attitude? Find the 95% confidence interval for the difference of the two means.

95% confidence interval for the difference of the two means.

Ho:
$$U_D = 0$$
 (0)

Hi: $U_D \neq 0$ (daim)

 $f = 6-1$
 $A = 0.05 \Rightarrow f = 2.57/.$
 $A = \frac{x_D - Ab}{S/In}$
 $A = \frac$

 $\overline{X}_{0} = 1 \rightarrow 2$ or $\overline{X}_{0} = -1$ $S_{0}^{+} = \frac{1}{2} \times \frac{1}{2}$ $t = -1^{2}$

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