Results

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85%

8.5
Out of 10 points

02:38
Time for this attempt

Your Answers:

1 · 1 / 1 point

The probability of rejecting the null hypothesis when, in fact, the null hypothesis is true is the

✓ ● significance level

○ power

○ p-value

○ standard error

compare

A research company published survey results from two random samples. Both samples were asked "Have you listened to an audio book in the last year?"

Listened to an audio book	2015	2018	Total
Yes	238	356	594
No	1677	1635	3312
Total	1915	1991	

Are a greater proportion listening to audio books in 2018 compared to 2015? Test the hypothesis that a great proportion of people listened to an audio book in 2018 than in 2015. Use a 0.01 significance level.

2 · 1 / 1 point

Consider the first sample to be the 2015 group and the second sample to be the 2018 group. What are the null and alternative hypotheses for the hypothesis test?

✓ ● H_0: $p_1 = p_2$
H_a: $p_1 < p_2$

○ H_0: $p_1 = p_2$
H_a: $p_1 > p_2$

○ H_0: $p_1 > p_2$
H_a: $p_1 < p_2$

○ H_0: $p_1 = p_2$
H_a: $p_1 \neq p_2$

3 · 1 / 1 point

Identify the test statistic. z = ____ (round the two decimal places as needed)

✓ -4.74

4 · 1 / 1 point

The p-value of the test is

✓ ● 0

○ 0.99

○ 0.05

○ 0.01

○ 1

5 · 1 / 1 point

Has the proportion who read print books increased? Select the correct conclusion of the hypothesis test.
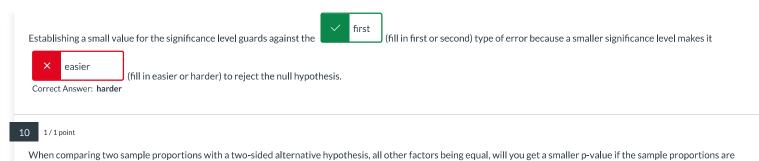
- ☑ **(selected, correct)** There is sufficient evidence to reject the null hypothesis in favor of the alternative and conclude that there is strong evidence that there are a greater proportion listening to audio books in 2018 compared to 2015.

- ○ There is no sufficient evidence to reject the null hypothesis in favor of the alternative. We can conclude that there are a smaller proportion listening to audio books in 2018 compared to 2015.

- ○ There is no sufficient evidence to reject the null hypothesis in favor of the alternative. We can conclude that the proportion listening to audio books in 2018 is the same compared to 2015.

- ○ There is sufficient evidence to prove the alternative hypothesis and conclude that there are a greater proportion listening to audio books in 2018 compared to 2015.

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6   0 / 1 point

Assume that we test for $H_0 : p = 0.3$ and $H_a : p \neq 0.3$ and fail to reject the null hypothesis with a 0.1 significance level. If we were to construct a _____ confidence interval, we expect to _____ 0.3 in the interval.

- ○ 90%; not contain
- ✗ ○ 95%; contain
  Correct Answer: **90%; contain**
- ○ 90%; contain
- ○ 10%; not contain

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7   1 / 1 point

Sir William Blackstone (1723–1780) wrote influential books on common law. He made the statement "**All presumptive evidence of felony should be admitted cautiously; for the law holds it better that ten guilty persons escape, than that one innocent party suffer.**"
Keep in mind that the null hypothesis in criminal trials is that the defendant is not guilty. Which of the following is correct about the two types of error in this context? (select all that apply)

- ☐ The type I error is having ten guilty persons escape
- ☑ **(correct)** The type II error is having ten guilty persons escape
- ☑ **(correct)** The type I error is having the innocent person suffer
- ☐ The type II error is having the innocent person suffer

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8   1 / 1 point

A researcher believes that the proportion of women who exercise with a friend is greater than the proportion of men. He takes a random sample from each population and records the response to the question, "Have you exercised with a friend at least once in the last seven days?" The null hypothesis is H_0: $p_{women} = p_{men}$. Choose the correct alternative hypothesis.

- ○ $p_{women} \neq p_{men}$
- ○ $p_{women} < p_{men}$
- ○ $p = 0$
- ☑ **(correct)** $p_{women} > p_{men}$

This question has been regraded.

9   Previous score 0.5 / 1 point   Regrade score 0.5 / 1 point

Does establishing a small value for the significance level guard against the first type of error (type I error) or guard against the second type of error (type II error)?

Establishing a small value for the significance level guards against the [✓ first] (fill in first or second) type of error because a smaller significance level makes it [✗ easier] (fill in easier or harder) to reject the null hypothesis.

Correct Answer: **harder**

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10 1 / 1 point

When comparing two sample proportions with a two-sided alternative hypothesis, all other factors being equal, will you get a smaller p-value if the sample proportions are close together or if they are far apart? Choose the correct explanation.

○ The p-value will be smaller if the sample proportions are far apart because a larger difference results in a pooled proportion closer to 0.5, and a pooled proportion close to 0.5 results in a smaller standard error, which is the denominator of the test statistic.

○ The p-value will be smaller if the sample proportions are close together because the difference between them is smaller.

○ The p-value will be smaller if the sample proportions are close together because closer proportions results in a smaller standard error, which is the denominator of the test statistic.

✓ ● The p-value will be smaller if the sample proportions are far apart because a larger difference results in a larger absolute value of the numerator of the test statistic.