Quiz 4 on Hypothesis Testing

Score: 0/10 0/10 answered

Question 1

The national average SAT score is roughly 1500. We would like to see if the high school seniors who apply to Duke have higher than average SAT scores. We randomly sample 100 applicants' files and record their SAT scores. Which of the following is the correct set of hypotheses for this research question? Hint: think about how many samples we have data from.

- H_0: $p = 1500$; H_A: $p > 1500$
- H_0: $\mu_{Duke} = \mu_{National}$; H_A: $\mu_{Duke} > \mu_{National}$
- H_0: $x = 1500$; H_A: $x > 1500$
- H_0: $\mu = 1500$; H_A: $\mu \neq 1500$
- H_0: $\mu = 1500$; H_A: $\mu > 1500$

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You wish to test the following claim (HaHa) at a significance level of α=0.10α=0.10.

Ho:μ=84.2Ho:μ=84.2
Ha:μ>84.2Ha:μ>84.2

You believe the population is normally distributed, but you do not know the standard deviation. You obtain a sample of size n=16n=16 with mean M=85.7M=85.7 and a standard deviation of SD=7.4SD=7.4.

What is the test statistic for this sample? (Report answer accurate to three decimal places.)

test statistic =

What is the p-value for this sample? (Report answer accurate to four decimal places.)

p-value =

The p-value is...

- less than (or equal to) αα
- greater than αα

This test statistic leads to a decision to...

- reject the null
- accept the null
- fail to reject the null

As such, the final conclusion is that...

- There is sufficient evidence to warrant rejection of the claim that the population mean is greater than 84.2.
- There is not sufficient evidence to warrant rejection of the claim that the population mean is greater than 84.2.
- The sample data support the claim that the population mean is greater than 84.2.
- There is not sufficient sample evidence to support the claim that the population mean is greater than 84.2.

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You wish to test the following claim (HaHa) at a significance level of $\alpha=0.02\alpha=0.02$.

$H\alpha:\mu=76.1Ho:\mu=76.1$
$Ha:\mu<76.1Ha:\mu<76.1$

You believe the population is normally distributed, but you do not know the standard deviation. You obtain a sample of size $n=88n=88$ with mean $M=68.3M=68.3$ and a standard deviation of $SD=19.3SD=19.3$.

What is the test statistic for this sample? (Report answer accurate to three decimal places.)

test statistic =

What is the p-value for this sample? (Report answer accurate to four decimal places.)

p-value =

The p-value is...

- less than (or equal to) $\alpha\alpha$
- greater than $\alpha\alpha$

This test statistic leads to a decision to...

- reject the null
- accept the null
- fail to reject the null

As such, the final conclusion is that...

- There is sufficient evidence to warrant rejection of the claim that the population mean is less than 76.1.
- There is not sufficient evidence to warrant rejection of the claim that the population mean is less than 76.1.
- The sample data support the claim that the population mean is less than 76.1.
- There is not sufficient sample evidence to support the claim that the population mean is less than 76.1.

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Score: 0/10 0/10 answered

Question 4

If your claim is in the null hypothesis and you fail to reject the null hypothesis, then your conclusion would be:

- There is not sufficient sample evidence to support the original claim
- There is sufficient evidence to warrant rejection of the original claim
- The sample data support the original claim
- There is not sufficient evidence to warrant rejection of the original claim

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Quiz 4 on Hypothesis Testing

Score: 0/10 0/10 answered

Question 5 < >

The mean weight of male dancers in a local modern dance company is less than 180 lbs. Express the null and alternative hypotheses in symbolic form for this claim.

$H_0 : \mu$

$H_1 : \mu$

Use the following codes to enter the following symbols:

$\geq$ enter >=

$\leq$ enter <=

$\neq$ enter !=

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Quiz 4 on Hypothesis Testing

Score: 0/10 0/10 answered

Question 6 < >

Test the claim that the proportion of men who own cats is significantly different than 80% at the 0.2 significance level.

The null and alternative hypothesis would be:

$H_0: p = 0.8$	$H_0: \mu = 0.8$	$H_0: p = 0.8$	$H_0: \mu = 0.8$	$H_0: \mu = 0.8$	$H_0: p = 0.8$
$H_1: p < 0.8$	$H_1: \mu > 0.8$	$H_1: p > 0.8$	$H_1: \mu \neq 0.8$	$H_1: \mu < 0.8$	$H_1: p \neq 0.8$

The test is:

two-tailed left-tailed right-tailed

Based on a sample of 60 people, 81% owned cats

The test statistic is: _____ (to 2 decimals)

The positive critical value is: _____ (to 2 decimals)

Based on this we:

- Fail to reject the null hypothesis
- Reject the null hypothesis

You wish to test the following claim (HaHa) at a significance level of α=0.05α=0.05.

H0:p=0.38H0:p=0.38
Ha:p≠0.38Ha:p≠0.38

You obtain a sample of size n=201n=201 in which there are 83 successful observations. For this test, you should NOT use the continuity correction, and you should use the normal distribution as an approximation for the binomial distribution.

What is the test statistic for this sample? (Report answer accurate to three decimal places.)

test statistic =

What is the p-value for this sample? (Report answer accurate to four decimal places.)

p-value =

The p-value is...

- less than (or equal to) αα
- greater than αα

This test statistic leads to a decision to...

- reject the null
- accept the null
- fail to reject the null

As such, the final conclusion is that...

- There is sufficient evidence to warrant rejection of the claim that the population proportion is not equal to 0.38.
- There is not sufficient evidence to warrant rejection of the claim that the population proportion is not equal to 0.38.
- The sample data support the claim that the population proportion is not equal to 0.38.
- There is not sufficient sample evidence to support the claim that the population proportion is not equal to 0.38.

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You are conducting a study to see if the accuracy rate for fingerprint identification is significantly more than 0.1. You use a significance level of $\alpha=0.02$.

$H_0: p=0.1$
$H_1: p>0.1$

You obtain a sample of size $n=440$ in which there are 53 successes.

What is the test statistic for this sample? (Report answer accurate to three decimal places.)

test statistic =

What is the p-value for this sample? (Report answer accurate to four decimal places.)

p-value =

The p-value is...

- less than (or equal to) α
- greater than α

This test statistic leads to a decision to...

- reject the null
- accept the null
- fail to reject the null

As such, the final conclusion is that...

- There is sufficient evidence to warrant rejection of the claim that the accuracy rate for fingerprint identification is more than 0.1.
- There is not sufficient evidence to warrant rejection of the claim that the accuracy rate for fingerprint identification is more than 0.1.
- The sample data support the claim that the accuracy rate for fingerprint identification is more than 0.1.
- There is not sufficient sample evidence to support the claim that the accuracy rate for fingerprint identification is more than 0.1.

You wish to test the following claim (HaHa) at a significance level of α=0.05α=0.05.

Ho:μ=84.9Ho:μ=84.9
Ha:μ>84.9Ha:μ>84.9

You believe the population is normally distributed, but you do not know the standard deviation. You obtain a sample of size n=80n=80 with mean M=90.1M=90.1 and a standard deviation of SD=13.2SD=13.2.

What is the test statistic for this sample? (Report answer accurate to three decimal places.)

test statistic =

What is the p-value for this sample? (Report answer accurate to four decimal places.)

p-value =

The p-value is...

- less than (or equal to) αα
- greater than αα

This test statistic leads to a decision to...

- reject the null
- accept the null
- fail to reject the null

As such, the final conclusion is that...

- There is sufficient evidence to warrant rejection of the claim that the population mean is greater than 84.9.
- There is not sufficient evidence to warrant rejection of the claim that the population mean is greater than 84.9.
- The sample data support the claim that the population mean is greater than 84.9.
- There is not sufficient sample evidence to support the claim that the population mean is greater than 84.9.

You wish to test the following claim (HaHa) at a significance level of $\alpha=0.005$.

$H_o:\mu=73.5$
$H_a:\mu\neq73.5$

You believe the population is normally distributed, but you do not know the standard deviation. You obtain a sample of size $n=18$ with mean $M=77.4$ and a standard deviation of $SD=7.2$.

What is the p-value for this sample? (Report answer accurate to four decimal places.)
p-value =

The p-value is...

- less than (or equal to) α
- greater than α

This p-value leads to a decision to...

- reject the null
- accept the null
- fail to reject the null

As such, the final conclusion is that...

- There is sufficient evidence to warrant rejection of the claim that the population mean is not equal to 73.5.
- There is not sufficient evidence to warrant rejection of the claim that the population mean is not equal to 73.5.
- The sample data support the claim that the population mean is not equal to 73.5.
- There is not sufficient sample evidence to support the claim that the population mean is not equal to 73.5.