Hypothesis Testing about a Mean μ Solutions

College students sleep for a mean equal to 5 hours the night before an exam as claimed by Professor Snodgrass. A sample of 250 college students reveal a mean of 4.2 hours with a standard deviation of 0.8 hours. Using the 1% level of significance to test the hypothesis, answer the following questions.

1. What is the claim?

 $H_0: \mu = 5$ Claim $H_1: \mu \neq 5$

2. What kind of test is this? Two tail test, right tail test, or left tail test? Two Tail Test





3. What are your critical value(s)? Approximate to the nearest thousandths. ± 2.576



Z – Test



 $z \approx -15.811$

5. What is your conclusion?

Reject H_0



The sample does not support the claim!

College students sleep for a mean is not equal to 4 hours the night before a final exam as claimed by Professor Snodgrass. A sample of 120 college students reveal a mean of 4.8 hours with a standard deviation of 1.2 hours. Using the 5% level of significance to test the hypothesis, answer the following questions.

6. What is the claim?

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H_0: \mu = 4H_1: \mu \neq 4 \text{ Claim}
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7. What kind of test is this? Two tail test, right tail test, or left tail test? Two Tail Test

 $\alpha = 5\%$



8. What are your critical value(s)? Approximate to the nearest thousandths. ± 1.960

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Z – Test



 $z \approx 7.303$

10. What is your conclusion?

Reject H_0



 H_1 : $\mu \neq 4$ Claim

The sample supports the claim!

College students have more than two pets at home as claimed by Professor Snodgrass. A sample of 150 college students reveal a mean of 3.2 pets with a standard deviation of 0.8 pets. Using the 10% level of significance to test the hypothesis, answer the following questions.

11. What is the claim?

$$H_0: \mu \leq 2$$
$$H_1: \mu > 2$$
Claim

12. What kind of test is this? Two tail test, right tail test, or left tail test? Right Tail Test

 $\alpha = 1\%$



13. What are your critical value(s)? Approximate to the nearest thousandths. 2.326

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Z – Test



 $z \approx 18.371$

15. What is your conclusion?

Reject H₀



 $H_1: \mu > 2$ Claim

The sample supports the claim!

College students spend more than 3 hours per night on social media as claimed by Professor Snodgrass. A sample of 20 college students reveal a mean of 3.2 hours with a standard deviation of 1.1 hours. Using the 5% level of significance to test the hypothesis, answer the following questions.

16. What is the claim?

$$H_0: \mu \le 3$$
$$H_1: \mu > 3 \text{ Claim}$$

17. What kind of test is this? Two tail test, right tail test, or left tail test? Right Tail Test

 $\alpha = 5\%$



18. What are your critical value(s)? Approximate to the nearest thousandths. 1.729

invT n = 20 Small Sample df = 19



T – Test



 $t \approx 0.813$

20. What is your conclusion?

Do Not Reject H_0



 H_1 : $\mu > 3$ Claim

The sample does not support the claim!

College Students have at least 250 friends on Instagram as claimed by Professor Snodgrass. A sample of 25 college students reveal a mean of 265.3 friends with a standard deviation of 32.8 friends. Using the 10% level of significance to test the hypothesis, answer the following questions.

21. What is the claim?

$$H_0: \mu \ge 250$$
 Claim
 $H_1: \mu < 250$

22. What kind of test is this? Two tail test, right tail test, or left tail test? Left Tail Test

 $\alpha = 10\%$



23. What are your critical value(s)? Approximate to the nearest thousandths. -1.318

invT n = 25 Small Sample df = 24

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T – Test



 $t \approx 2.332$

25. What is your conclusion?

Do Not Reject H_0



The sample supports the claim!

The following data represents the amount of time (hours) students on Netflix per day. Approximate your answer to the nearest tenths.

2,1,0,3,2,0,0,1,2,4

Compute the:

26. Sample mean. Approximate to the nearest thousandths. 1.5

27. Sample standard deviation. Approximate to the nearest thousandths. 1.354

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Students spend more than 2 hours a day on social media, as claimed by Professor Snodgrass. Use the 10% level of significance to perform the following hypothesis test.

28. What is the claim?

 $\alpha = 10\%$

$$H_0: \mu \le 2$$
$$H_1: \mu > 2 \text{ Claim}$$

29. What kind of test is this? Two tail test, right tail test, or left tail test? Right Tail Test

 Bight Tail Test

 Do Not Reject

 Ho

 10%

 e

 1.383

30. What are your critical value(s)? Approximate to the nearest thousandths. 1.383

invT n = 10 Small Sample df = 9



T – Test



 $t \approx -1.168$

32. What is your conclusion?

Do Not Reject H_0



 H_1 : $\mu > 2$ Claim

The sample does not support the claim!