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Module 5 Quiz

Adapt 295

1/1 point (graded)

Suppose you have the following hypotheses:

H_0 : A die is fair

H_a : A die is not fair

We toss a die 6 times, and reject H_0 if ≥ 4 results are 5 or 6. The chance of making a Type I Error is:

☒ 0.10 ✓

☐ 0.11

☐ 0.12

☐ 0.13

Submit

You have used 1 of 1 attempt

✓ Correct (1/1 point)

Adapt 309

1/1 point (graded)

Let p be a population proportion. If $H_0: p = 0.2$ and $H_a: p \neq 0.2$, what type of hypothesis test would we perform?

☐ Upper one-sided alternative hypothesis☐ Lower one-sided alternative hypothesis☒ Two-sided alternative hypothesis ✓Submit

You have used 1 of 1 attempt

✓ Correct (1/1 point)

Adapt 312

0/1 point (graded)

In the past, it has taken an express mail company an average of 2 days to deliver packages. After hiring a consulting firm, they want to know if delivery has improved. Let μ = average number of days needed to deliver a package after hiring a consulting firm. The company wants to test the following:

$H_o: \mu \geq 2$ against $H_a: \mu < 2$.

A sample of 100 packages yields $\bar{x} = 1.8$ and $s = 1.5$. For $\alpha = 0.05$, what do you conclude?

- ☐ We fail to reject H_o , meaning that there has NOT been an improvement in delivery times.
- ☐ We fail to reject H_o , meaning that there has been an improvement in delivery times.
- ☒ We reject H_o , meaning that there has NOT been an improvement in delivery times. ✖
- ☐ We reject H_o , meaning that there has been an improvement in delivery times.

Submit

You have used 1 of 1 attempt

✖ Incorrect (0/1 point)

Adapt 320

0/1 point (graded)

A jar of applesauce is supposed to weigh 18 ounces. The company is trying to determine if its applesauce is overweight. Let μ = average ounces in a jar of applesauce. You want to test the following:

$H_0: \mu \leq 18$ ounces against $H_a: \mu > 18$

A random sample of 32 jars yields $\bar{x} = 18.2$ ounces and $s = 0.5$ ounces. For $\alpha = 0.05$, what do you conclude?

☒ We fail to reject H_0 , meaning that the jars are NOT overweight. ✖

☐ We fail to reject H_0 , meaning that the jars are overweight.

☐ We reject H_0 , meaning that that the jars are NOT overweight.

☐ We reject H_0 , meaning that the jars are overweight.

Submit

You have used 1 of 1 attempt

✖ Incorrect (0/1 point)

Adapt 326

1/1 point (graded)

Residents of Hawkins, Indiana, believe something has affected the growth of adult males. Let μ = average height of an adult male born in Hawkins, Indiana. The city wants to test $H_0: \mu = 69$ inches against $H_a: \mu \neq 69$ inches. A random sample of 36 males born in Hawkins yields $\bar{x} = 67.5$ and $s = 4$. For $\alpha = 0.05$, what do you conclude?

- ☐ We fail to reject H_0 , meaning that the average height is less than 69 inches.
- ☐ We fail to reject H_0 , meaning that the average height is NOT 69 inches.
- ☐ We reject H_0 , meaning that that the average height is less than 69 inches.
- ☒ We reject H_0 , meaning that the average height is NOT 69 inches. ✓

You have used 1 of 1 attempt

✓ Correct (1/1 point)

Adapt 330

0/1 point (graded)

In the past, a supermarket has sold an average of 50 pounds of macaroni and cheese per day. Each day of the week, the same average amount of macaroni and cheese is sold. Recently, the store has put a mouthwatering picture of macaroni and cheese on all shopping carts. In the 49 days since putting the picture on the carts, they have found $\bar{x} = 53$ pounds and $s = 14$ pounds. Let μ = average pounds sold per day since putting the picture on carts. The store wishes to test the following:

$H_0: \mu \leq 50$ against $H_a: \mu > 50$

For $\alpha = 0.05$, what do you conclude?

- ☐ We fail to reject H_0 , meaning that there has NOT been an improvement in sales.
- ☒ We fail to reject H_0 , meaning that there has been an improvement in sales. ✖
- ☐ We reject H_0 , meaning that there has NOT been an improvement in sales.
- ☐ We reject H_0 , meaning that there has been an improvement in sales.

Submit

You have used 1 of 1 attempt

✖ Incorrect (0/1 point)

Adapt 336

0/1 point (graded)

In the past, it has taken an express mail company an average of 2 days to deliver packages. After hiring a consulting firm, they want to know if delivery has improved. Let μ = average number of days needed to deliver a package after hiring a consulting firm. The company wants to test the following:

$H_0: \mu \geq 2$ against $H_a: \mu < 2$

A sample of 25 packages yields $\bar{x} = 1.6$ and $s = 1.5$. For $\alpha = 0.05$, what would you conclude? Assume the relevant population follows a normal random variable.

☐ We fail to reject H_0 , meaning that there has NOT been an improvement in delivery times.

☒ We fail to reject H_0 , meaning that there has been an improvement in delivery times. ✖

☐ We reject H_0 , meaning that there has NOT been an improvement in delivery times.

☐ We reject H_0 , meaning that there has been an improvement in delivery times.

Submit

You have used 1 of 1 attempt

✖ Incorrect (0/1 point)

Adapt 342

1/1 point (graded)

A jar of applesauce is supposed to weigh 18 ounces. The company is trying to determine if its applesauce is overweight. Let μ = average ounces in a jar of applesauce. You want to test the following:

$H_0: \mu \leq 18$ ounces against $H_a: \mu > 18$

A random sample of 20 jars yields $\bar{x} = 18.2$ ounces and $s = 0.4$ ounces. For $\alpha = 0.05$, what do you conclude? Assume the relevant population follows a normal random variable.

- ☐ We fail to reject H_0 , meaning that the jars are NOT overweight.
- ☐ We fail to reject H_0 , meaning that the jars are overweight.
- ☐ We reject H_0 , meaning that that the jars are NOT overweight.
- ☒ We reject H_0 , meaning that the jars are overweight. ✓

Submit

You have used 1 of 1 attempt

✓ Correct (1/1 point)

Adapt 348

1/1 point (graded)

Residents of Hawkins, Indiana, believe something has stunted the growth of adult males. Let μ = average height of an adult male born in Hawkins, Indiana. The city wants to test $H_0: \mu = 69$ inches against $H_a: \mu \neq 69$ inches. A random sample of 16 males born in Hawkins yields $\bar{x} = 66.5$ and $s = 4$. For $\alpha = 0.05$, what do you conclude? Assume the relevant population follows a normal random variable.

- ☐ We fail to reject H_0 , meaning that the average height is less than 69 inches.

- ☐ We fail to reject H_0 , meaning that the average height is NOT 69 inches.
- ☐ We reject H_0 , meaning that the average height is less than 69 inches.
- ☒ We reject H_0 , meaning that the average height is NOT 69 inches. ✓

You have used 1 of 1 attempt

✓ Correct (1/1 point)

Adapt 354

1/1 point (graded)

In the past, a supermarket has sold an average of 50 pounds of macaroni and cheese per day. Each day of the week, the same average amount of macaroni and cheese is sold. Recently, the store has put a mouthwatering picture of macaroni and cheese on all shopping carts. In the 25 days since putting the picture on the carts, they have found $\bar{x} = 53$ pounds and $s = 14$ pounds. Let μ = average pounds sold per day since putting the picture on carts. The store wishes to test the following:

$H_0: \mu \leq 50$ against $H_a: \mu > 50$

For $\alpha = 0.05$, what do you conclude? Assume the relevant population follows a normal random variable.

- ☒ We fail to reject H_0 , meaning that there has NOT been an improvement in sales. ✓

- ☐ We fail to reject H_0 , meaning that there has been an improvement in sales.
- ☐ We reject H_0 , meaning that there has NOT been an improvement in sales.
- ☐ We reject H_0 , meaning that there has been an improvement in sales.

You have used 1 of 1 attempt

✓ Correct (1/1 point)

Adapt 360

1/1 point (graded)

Let p = fraction of shots taken from right side of the court when the rebound is grabbed on the right side of the court. Of 110 missed shots from the right side of the court, 65 were rebounded on the right side of the court. For $\alpha = 0.05$, $H_0: p = 0.5$, and a two-tailed test, what would you conclude?

- ☒ We fail to reject H_0 , meaning that there is NO difference in shots made from the expected proportion. ✓
- ☐ We fail to reject H_0 , meaning that the proportion of shots made is less than expected.
- ☐ We fail to reject H_0 , meaning that the proportion of shots made is more than expected.

- ☐ We reject H_0 , meaning that there is a difference in shots made from the expected proportion.
- ☐ We reject H_0 , meaning that the proportion of shots made is less than expected.
- ☐ We reject H_0 , meaning that the proportion of shots made is more than expected.

You have used 1 of 1 attempt

✓ Correct (1/1 point)

Adapt 366

1/1 point (graded)

Let p = fraction of two-day air packages that arrive on time. The post office claims that 95% of all packages arrive on time. An auditing firm found that 250 of 270 packages arrive on time. You want to test the following:

$$H_0: p \geq 0.95, H_a: p < 0.95$$

Given $\alpha = 0.05$, what would you conclude?

- ☒ We fail to reject H_0 , meaning that 95% or more of packages arrive on time. ✓
- ☐ We fail to reject H_0 , meaning that more than 95% of packages arrive on time.

- ☐ We fail to reject H_0 , meaning that less than 95% of packages arrive on time.
- ☐ We reject H_0 , meaning that more than 95% of packages arrive on time.
- ☐ We reject H_0 , meaning that less than 95% of packages arrive on time.

You have used 1 of 1 attempt

✓ Correct (1/1 point)

Adapt 372

1/1 point (graded)

Suppose that a company selling flu vaccines says that it's effective if fewer than 20% of all those who get a flu shot actually become sick with the flu. Let p = fraction of people who have been given the flu shot and become sick anyway. You want to test the following:

$H_0: p \leq 0.20$ against $H_a: p > 0.20$

If 75 of 300 people given the vaccine also get sick from the flu, what would you conclude given $\alpha = 0.05$?

- ☐ We fail to reject H_0 , meaning that the flu vaccine is effective.

☐ We fail to reject H_0 , meaning that flu vaccine is ineffective.

☐ We reject H_0 , meaning that the flu vaccine is effective.

☒ We reject H_0 , meaning that flu vaccine is ineffective. ✓

Submit

You have used 1 of 1 attempt

✓ Correct (1/1 point)

Adapt 378

1/1 point (graded)

A researcher believes 20% of all people are left-handed, but you believe it might be less. In a sample of 100 people, 13 people are left-handed. Let p = fraction of left-handed people. You want to test the following:

$$H_0: p \geq 0.2, H_a: p < 0.20$$

Given $\alpha = 0.05$, what would you conclude?

☐ We reject H_0 , meaning that proportion of left-handed people is greater than or equal to 20%.

☒ We reject H_0 , meaning that proportion of left-handed people is less than 20%. ✓

- ☐ We fail to reject H_0 , meaning that proportion of left-handed people is greater than or equal to 20%.
- ☐ We fail to reject H_0 , meaning that proportion of left-handed people is less than 20%.

You have used 1 of 1 attempt

✓ Correct (1/1 point)

Adapt 384

1/1 point (graded)

The Module5QuizData_HudsonHighSchool.xlsx spreadsheet contains the income of randomly selected families whose students attend Hudson and Cedar Falls High Schools. For $\alpha = 0.05$, what would you conclude about the variances of family incomes at the two schools? Assume family incomes are normally distributed at each school.

- ☒ The variances are equal. ✓
- ☐ The variances are NOT equal.

You have used 1 of 1 attempt

✓ Correct (1/1 point)

Adapt 390

0/1 point (graded)

The Module5QuizData_HudsonHighSchool.xlsx spreadsheet contains the income of randomly selected families whose students attend Hudson and Cedar Falls High Schools. You want to test H_0 : Hudson mean income = Cedar Falls mean income against H_a : Hudson mean income \neq Cedar Falls mean income. For $\alpha = 0.05$, what do you conclude?

- ☐ We reject H_0 , because the p-value is 0.02.
- ☐ We reject H_0 , because the p-value is 0.04.
- ☒ We fail to reject H_0 , because the p-value is 0.12. ✖
- ☐ We fail to reject H_0 , because the p-value is 0.24.

Submit

You have used 1 of 1 attempt

✖ Incorrect (0/1 point)

Adapt 397

1/1 point (graded)

The Module5QuizData_Drugs.xlsx spreadsheet contains the reduction in cholesterol resulting from a random sample of people taking Drug A and Drug B. You want to test H_0 : mean reduction in cholesterol from Drug A = mean reduction in cholesterol from Drug B against H_a : mean reduction in cholesterol from Drug A \neq mean reduction in cholesterol from Drug B. For $\alpha = 0.05$, what would you conclude?

- ☒ We reject H_0 , meaning that there is a difference in cholesterol reduction between the drugs. ✓
- ☐ We reject H_0 , meaning there is a NO difference in cholesterol reduction between the drugs.
- ☐ We fail to reject H_0 , there is a difference in cholesterol reduction between the drugs.
- ☐ We fail to reject H_0 , meaning that there is a difference in cholesterol reduction between the drugs.

Submit

You have used 1 of 1 attempt

✓ Correct (1/1 point)

Adapt 403

1/1 point (graded)

The Module5QuizData_Process.xlsx spreadsheet contains the amount (in pounds) of a drug produced for 100 days using Process A and the amount of a drug (in pounds) produced using Process B on a different set of 100 days. You want to test H_0 : mean pounds produced in a day with Process A = mean pounds produced in a day with Process B against H_a : mean pounds produced in a day with Process A \neq mean pounds produced in a day with Process B. For $\alpha = 0.05$, what would you conclude?

- ☐ We reject H_0 , meaning that there is NO difference in production rates.
- ☐ We reject H_0 , meaning that there is a difference in production rates.
- ☒ We fail to reject H_0 , meaning that there is NO difference in production rates. ✓
- ☐ We fail to reject H_0 , meaning that there is a difference in production rates.

You have used 1 of 1 attempt

✓ Correct (1/1 point)

Adapt 409

1/1 point (graded)

The Module5QuizData_Swimming.xlsx spreadsheet contains 12 swimmers best time for swimming 100 meters in January and their best time in March for swimming 100 meters after taking time off during the month of February. You wish to test H_0 : best time in January = best time in March against H_a : best time in January > best time in March. Assuming normality, for $\alpha = 0.05$, what would you conclude?

- ☐ We reject H_0 , meaning there is NO difference in best times.
- ☒ We reject H_0 , there is a difference in best times. ✓

☐ We fail to reject H_0 , meaning there is NO difference in best times.

☐ We fail to reject H_0 , meaning there is a difference in best times.

Submit

You have used 1 of 1 attempt

✓ Correct (1/1 point)

Adapt 415

1/1 point (graded)

A company has been accused of discriminating in their hiring practices based on race. In the table below, the number of qualified applicants hired and not hired are provided by race.

	Hired	Not hired
Caucasian	100	120
African American	50	50
Hispanic	35	40
Asian	45	45

You are testing to determine if hiring and race are independent. For $\alpha = 0.05$, what would you conclude?

☐ Fail to reject the hypothesis of independence, meaning that there is a relationship between hiring and race.

☒ Fail to reject the hypothesis of independence, meaning that there is NO relationship between hiring and race. ✓

☐ Reject the hypothesis of independence, meaning that there is a relationship between hiring and race.

☐ Reject the hypothesis of independence, meaning that there is NO relationship between hiring and race.

Submit

You have used 1 of 1 attempt

✓ Correct (1/1 point)

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