edX

# Module 5 Quiz
## Adapt 295

0/1 point (graded)
Suppose you have the following hypotheses:

Ho: A die is fair

Ha: A die is not fair

We toss a die 6 times, and reject Ho 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

## Adapt 309

1/1 point (graded)
Let p be a population proportion. If Ho: p = 0.2 and Ha: p ≠ 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

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## Adapt 312

1/1 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 $\mu$= average number of days needed to deliver a package after hiring a consulting firm. The company wants to test the following:

$$H_o: \mu >= 2 \text{ against } H_a: \mu < 2.$$

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

● We fail to reject Ho, meaning that there has NOT been an improvement in delivery times. ✔

○ We fail to reject Ho, meaning that there has been an improvement in delivery times.

○ We reject Ho, meaning that there has NOT been an improvement in delivery times.

○ We reject Ho, meaning that there has been an improvement in delivery times.

Submit    You have used 1 of 1 attempt

# 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 $\mu$ = average ounces in a jar of applesauce. You want to test the following:

$H_o$: $\mu <= 18$ ounces against $H_a$: $\mu > 18$

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

○ We fail to reject Ho, meaning that the jars are NOT overweight.

◉ We fail to reject Ho, meaning that the jars are overweight. ✗

○ We reject Ho, meaning that that the jars are NOT overweight.

○ We reject Ho, meaning that the jars are overweight.

| Submit | You have used 1 of 1 attempt |
|---|---|

# Adapt 326

0/1 point (graded)

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

○ We fail to reject Ho, meaning that the average height is less than 69 inches.

◉ We fail to reject Ho, meaning that the average height is NOT 69 inches. ✗

○ We reject Ho, meaning that that the average height is less than 69 inches.

○ We reject Ho, meaning that the average height is NOT 69 inches.

## 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 xbar = 53 pounds and s = 14 pounds. Let $\mu$ = average pounds sold per day since putting the picture on carts. The store wishes to test the following:

$H_o: \mu <= 50$ against $H_a: \mu > 50$

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

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

- ○ We fail to reject Ho, meaning that there has been an improvement in sales.

- ⦿ We reject Ho, meaning that there has NOT been an improvement in sales. ✖

- ○ We reject Ho, meaning that there has been an improvement in sales.

## 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 $\mu$ = average number of days needed to deliver a package after hiring a consulting firm. The company wants to test the following:

$Ho: \mu >= 2$ against $Ha: \mu < 2$

A sample of 25 packages yields xbar = 1.6 and s = 1.5. For α = 0.05, what would you conclude? Assume the relevant population follows a normal random variable.

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

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

○ We reject Ho, meaning that there has NOT been an improvement in delivery times.

○ We reject Ho, meaning that there has been an improvement in delivery times.

| Submit | You have used 1 of 1 attempt |

## Adapt 342

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:

# Ho: μ <= 18 ounces against Ha: μ > 18

A random sample of 20 jars yields xbar = 18.2 ounces and s = 0.4 ounces. For α=0.05, what do you conclude? Assume the relevant population follows a normal random variable.

○ We fail to reject Ho, meaning that the jars are NOT overweight.

⦿ We fail to reject Ho, meaning that the jars are overweight. ✖

○ We reject Ho, meaning that that the jars are NOT overweight.

○ We reject Ho, meaning that the jars are overweight.

## Adapt 348

0/1 point (graded)

Residents of Hawkins, Indiana, believe something has stunted the growth of adult males. Let $\mu$ = average height of an adult male born in Hawkins, Indiana. The city wants to test Ho: $\mu$ = 69 inches against Ha: $\mu \neq$ 69 inches. A random sample of 16 males born in Hawkins yields xbar = 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 Ho, meaning that the average height is less than 69 inches.

○  We fail to reject Ho, meaning that the average height is NOT 69 inches.

○  We reject Ho, meaning that that the average height is less than 69 inches.

◉  We reject Ho, meaning that the average height is NOT 69 inches. ✔

Submit    You have used 1 of 1 attempt

ⓘ  Answers are displayed within the problem

## Adapt 354

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 25 days since putting the picture on the carts, they have found xbar = 53 pounds and s = 14 pounds. Let $\mu$ = average pounds sold per day since putting the picture on carts. The store wishes to test the following:

$$H_o: \mu <= 50 \text{ against } H_a: \mu > 50$$

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

- ⦿ We fail to reject Ho, meaning that there has NOT been an improvement in sales. ✔
- ○ We fail to reject Ho, meaning that there has been an improvement in sales.
- ○ We reject Ho, meaning that there has NOT been an improvement in sales.
- ○ We reject Ho, meaning that there has been an improvement in sales.

| Submit | You have used 1 of 1 attempt |

ℹ Answers are displayed within the problem

## Adapt 360

0/1 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 α = 0.05, Ho: p = 0.5, and a two-tailed test, what would you conclude?

- ⦿ We fail to reject Ho, meaning that there is NO difference in shots made from the expected proportion. ✔
- ○ We fail to reject Ho, meaning that the proportion of shots made is less than expected.
- ○ We fail to reject Ho, meaning that the proportion of shots made is more than expected.
- ○ We reject Ho, meaning that there is a difference in shots made from the expected proportion.
- ○ We reject Ho, meaning that the proportion of shots made is less than expected.

○   We reject Ho, meaning that the proportion of shots made is more than expected.

Submit    You have used 1 of 1 attempt

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ⓘ   Answers are displayed within the problem

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## Adapt 366

0/1 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:

$$H_o: p >= 0.95, \quad H_a: p < 0.95$$

Given α = 0.05, what would you conclude?

◉   We fail to reject Ho, meaning that 95% or more of packages arrive on time.  ✔

○   We fail to reject Ho, meaning that more than 95% of packages arrive on time.

○   We fail to reject Ho, meaning that less than 95% of packages arrive on time.

○   We reject Ho, meaning that more than 95% of packages arrive on time.

○   We reject Ho, meaning that less than 95% of packages arrive on time.

Submit    You have used 1 of 1 attempt

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ⓘ   Answers are displayed within the problem

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## Adapt 372

0/1 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:

$H_o$: p <= 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 α = 0.05?

○ We fail to reject Ho, meaning that the flu vaccine is effective.

○ We fail to reject Ho, meaning that flu vaccine is ineffective.

○ We reject Ho, meaning that the flu vaccine is effective.

◉ We reject Ho, meaning that flu vaccine is ineffective. ✔

Submit    You have used 1 of 1 attempt

ⓘ Answers are displayed within the problem

## Adapt 378

0/1 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:

$H_o$: p >= 0.2, $H_a$: p < 0.20

Given α = 0.05, what would you conclude?

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

◉ We reject Ho, meaning that proportion of left-handed people is less than 20%. ✔

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

○ We fail to reject Ho, meaning that proportion of left-handed people is less than 20%.

| Submit | You have used 1 of 1 attempt |

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ⓘ Answers are displayed within the problem

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## 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 α = 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.

| Submit | You have used 1 of 1 attempt |

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✔ Correct (1/1 point)

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## 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 Ho: Hudson mean income = Cedar Falls mean income against Ha: Hudson mean income ≠ Cedar Falls mean income. For α = 0.05, what do you conclude?

○ We reject Ho, because the p-value is 0.02.

○ We reject Ho, because the p-value is 0.04.

○ We fail to reject Ho, because the p-value is 0.12.

◉ We fail to reject Ho, because the p-value is 0.24. ✔

Submit    You have used 1 of 1 attempt

ⓘ Answers are displayed within the problem

## Adapt 397

0/1 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 Ho: mean reduction in cholesterol from Drug A = mean reduction in cholesterol from Drug B against Ha: mean reduction in cholesterol from Drug A ≠ mean reduction in cholesterol from Drug B. For α = 0.05, what would you conclude?

◉ We reject Ho, meaning that there is a difference in cholesterol reduction between the drugs. ✔

○ We reject Ho, meaning there is a NO difference in cholesterol reduction between the drugs.

○ We fail to reject Ho, there is a difference in cholesterol reduction between the drugs.

○ We fail to reject Ho, meaning that there is NO difference in cholesterol reduction between the drugs.

Submit    You have used 1 of 1 attempt

## Adapt 403

0/1 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 Ho: mean pounds produced in a day with Process A = mean pounds produced in a day with Process B against Ha: mean pounds produced in a day with Process A ≠ mean pounds produced in a day with Process B. For α = 0.05, what would you conclude?

○  We reject Ho, meaning that there is NO difference in production rates.

○  We reject Ho, meaning that there is a difference in production rates.

◉  We fail to reject Ho, meaning that there is NO difference in production rates.  ✔

○  We fail to reject Ho, meaning that there is a difference in production rates.

| Submit | You have used 1 of 1 attempt |
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## Adapt 409

0/1 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 Ho: best time in January = best time in March against Ha: best time in January > best time in March. Assuming normality, for α = 0.05, what would you conclude?

○  We reject Ho, meaning there is NO difference in best times.

○  We reject Ho, there is a difference in best times.

○ We fail to reject Ho, meaning there is NO difference in best times. ✗

○ We fail to reject Ho, meaning there is a difference in best times.

Submit    You have used 1 of 1 attempt

## 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