Unit 05: Estimation and Hypothesis Testing

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1. Unit 05: Estimation and Hypothesis Testing

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4. Chapter: Unit 05: Estimation and Hypothesis Testing

1. Unit 05: Estimation and Hypothesis Testing Questions

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4.1.1. A beverage filling machine, when in perfect adjustment, fills bottl...

Author: David Bourgeois

A beverage filling machine, when in perfect adjustment, fills bottles of Sierra Nevada Pale Ale® with 12 ounces of refreshment. A random sample of 51 bottles is selected and the contents are measured. The sample yields a mean content of 11.88 ounces with a sample standard deviation of 0.3565 ounces. If the p-value associated with the test statistic equals 0.001, this will lead you to do which of the following?

Please choose only one answer:

- Reject the null hypothesis and conclude that the machine fills the bottles at a value statistically different from 12 ounces
- Reject the null hypothesis and conclude that the machine fills the bottles at a value statistically less from 12 ounces
- Fail to reject the null hypothesis and prove that the machine fills the bottles at a value equal to 12 ounces
- Fail to reject the null hypothesis and conclude there is not enough evidence to show the machine fills the bottles at a value statistically different than 12 ounces

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4.1.2. A beverage filling machine, when in perfect adjustment, fills bottl...

Author: David Bourgeois

A beverage filling machine, when in perfect adjustment, fills bottles of Sierra Nevada Pale Ale® with 12 ounces of refreshment. A random sample of 51 bottles is selected and the contents are measured. The sample yields a mean content of 11.88 ounces with a sample standard deviation of 0.3565 ounces. To test if the machine is in perfect adjustment at 12 ounces, the null and alternative hypotheses are best written as which of the following?

Please choose only one answer:

- $$ \begin{matrix} H_0: \mu = 12 & \\ H_A: \mu \neq 12 & \end{matrix} $$
- $$ \begin{matrix} H_0: \mu \neq 12 & \\ H_A: \mu = 12 & \end{matrix} $$
- $$ \begin{matrix} H_0: \mu = 12 & \\ H_A: \mu \leq 12 & \end{matrix} $$
- $$ \begin{matrix} H_0: \mu = 12 & \\ H_A: \mu < 12 & \end{matrix} $$

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4.1.3. A new dental office has just opened in the town of Newsville. The o...

Author: David Bourgeois

A new dental office has just opened in the town of Newsville. The owners of the dental practice decided to locate in Newsville based on the assumption that the new practice would see an average of 35 patients a month in the first year of business. Which of the following statements on the null and alternative hypotheses best represents this scenario (assume that ? represents the number of patients per month)?

Please choose only one answer:

- $$ \begin{matrix} H_0: \mu = 35 & \\ H_A: \mu < 35 & \end{matrix} $$
- $$ \begin{matrix} H_0: \mu = 35 & \\ H_A: \mu \leq 35 & \end{matrix} $$
- $$ \begin{matrix} H_0: \mu = 35 & \\ H_A: \mu \neq 35 & \end{matrix} $$
- $$ \begin{matrix} H_0: \mu \neq 35 & \\ H_A: \mu = 35 & \end{matrix} $$

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4.1.4. A sample of 196 houses is taken to estimate the average electric us...

Author: David Bourgeois

A sample of 196 houses is taken to estimate the average electric usage per month. The sample mean is 2,000 kilowatts per hour, and the population standard deviation is 350 kilowatt hours. What will be the 95% confidence interval for the estimate of the population mean?

Please choose only one answer:

- 1314 kilowatts per hour to 2686 kilowatts per hour
- 1951 kilowatts per hour to 2049 kilowatts per hour
- 1998 4 kilowatts per hour to 2001.96 kilowatts per hour
- 1650 kilowatts per hour to 2350 kilowatts per hour

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4.1.5. A simple random sample of 36 statistics students is taken. The aver...

Author: David Bourgeois

A simple random sample of 36 statistics students is taken. The average attention span of college students listening to a lecture on statistics is 17 minutes with a standard deviation of 5 minutes. What is the probability that the attention span of a random student will be between 15 and 17 minutes?

Please choose only one answer:

- 0.51
- 0.08
- 0.49
- 0.50

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4.1.6. A simple random sample of 36 statistics students is taken. The aver...

Author: David Bourgeois

A simple random sample of 36 statistics students is taken. The average attention span of college students listening to a lecture on statistics is 17 minutes with a standard deviation of 5 minutes. What is the probability that the attention span of a random student will be greater than 18 minutes?

Please choose only one answer:

- 0.12
- 0.78
- 1.0
- 0.0

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4.1.7. A study of college students in 1999 found that 202 out of 1,195 stu...

Author: David Bourgeois

A study of college students in 1999 found that 202 out of 1,195 students received work-study grants. A 2007 study found that 779 students out of 5,727 received such grants. We want to test if the proportion of students receiving work study grants declined between 2007 ($$ p_2 $$) and 1999 ($$ p_1 $$). What is the null hypothesis for the test?

Please choose only one answer:

- $$ \begin{matrix} H_0: p_2 \geq p_1 & \\ H_A: p_2 < p_1 & \end{matrix} $$
- $$ \begin{matrix} H_0: p_2 = p_1 & \\ H_A: p_2 < p_1 & \end{matrix} $$
- $$ \begin{matrix} H_0: p_2 = p_1 & \\ H_A: p_2 \neq p_1 & \end{matrix} $$
- $$ \begin{matrix} H_0: p_2 \leq p_1 & \\ H_A: p_2 > p_1 & \end{matrix} $$

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4.1.8. According to a customer satisfaction survey conducted on behalf of ...

Author: David Bourgeois

According to a customer satisfaction survey conducted on behalf of the nation's largest retailer, the average rating of satisfaction for customers in 2008 was 85.4 (out of 100). Assume that the population mean is 85.4 for the customer satisfaction rating, the customer satisfaction rating is normally distributed, and the population standard deviation is 8.2. What is the probability that a randomly selected customer will have a satisfaction rating between 75.0 and 95.0?

Please choose only one answer:

- 0.78
- 0.10
- 0.88
- 0.22

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4.1.9. According to a customer satisfaction survey conducted on behalf of ...

Author: David Bourgeois

According to a customer satisfaction survey conducted on behalf of the nation's largest retailer, the average rating of satisfaction for customers in 2008 was 85.4 (out of 100). Assume that the population mean is 85.4 for the customer satisfaction rating, the customer satisfaction rating is normally distributed, and the population standard deviation is 8.2. What is the probability that a randomly selected customer will have a satisfaction rating greater than 100.0?

Please choose only one answer:

- 0.78
- 0.22
- 0.04
- 0.96

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4.1.10. According to a customer satisfaction survey conducted on behalf of ...

Author: David Bourgeois

According to a customer satisfaction survey conducted on behalf of the nation's largest retailer, the average rating of satisfaction for customers in 2008 was 85.4 (out of 100). Assume that the population mean is 85.4 for the customer satisfaction rating, the customer satisfaction rating is normally distributed, and the population standard deviation is 8.2. What customer satisfaction rating will put a randomly selected customer's rating in the top 10 percent of satisfied customers?

Please choose only one answer:

- Rating = 95.91
- Rating = 86.68
- Rating = 84.12
- Rating = 74.86

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4.1.11. Assume the federal government releases an estimate of an increase o...

Author: David Bourgeois

Assume the federal government releases an estimate of an increase of 250,000 new jobs for the month of January. However, a sample taken of 20 economists provides an average estimated number of new jobs totaling 266,000, with a sample standard deviation of 24,000. Treat the federal government's estimate as the population mean. Say you wish to test if the economists' estimate represents a statistically significant increase over the federal government's estimate for the job increase. Which of the following accurately represents the null hypothesis of that test?

Please choose only one answer:

- $$ H_0: \mu \leq 250,000 $$
- $$ H_0: \mu \geq 250,000 $$
- $$ H_0: \mu = 250,000 $$
- $$ H_0: \mu = 0 $$

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4.1.12. Assume the federal government releases an estimate of an increase o...

Author: David Bourgeois

Assume the federal government releases an estimate of an increase of 250,000 new jobs for the month of January. However, a sample taken of 20 economists provides an average estimated number of new jobs totaling 266,000, with a sample standard deviation of 24,000. Treat the federal government's estimate as the population mean. Say you wish to test if the economists' estimate represents a statistically significant increase over the federal government's estimate for the job increase. Based on this information, which of the following statements is true?

Please choose only one answer:

- To evaluate the null hypothesis and calculate the appropriate test statistic, you will need to refer to the Z-distribution.
- To evaluate the null hypothesis and calculate the appropriate test statistic, you will need to refer to the t-distribution with degrees of freedom equal to 20.
- To evaluate the null hypothesis and calculate the appropriate test statistic, you will need to refer to the t-distribution with degrees of freedom equal to 19.
- To evaluate the null hypothesis and calculate the appropriate test statistic, you will need to refer to the t-distribution with degrees of freedom equal to 250,000.

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4.1.13. If the level of significance equals 0.10, then the area in one tail...

Author: David Bourgeois

If the level of significance equals 0.10, then the area in one tail of the Z-distribution for a two-tailed hypothesis tests equals which of the following?

Please choose only one answer:

- 0.05
- 0.10
- 0.20
- 0.50

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4.1.14. If the level of significance equals 0.10, then the area in one tail...

Author: David Bourgeois

If the level of significance equals 0.10, then the area in one tail of the Z-distribution for a one-tailed hypothesis tests equals which of the following?

Please choose only one answer:

- 0.05
- 0.10
- 0.20
- 0.50

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4.1.15. If the level of significance equals 0.10, then the area in one tail...

Author: David Bourgeois

If the level of significance equals 0.10, then the area in one tail of the t-distribution for a two-tailed hypothesis tests equals which of the following?

Please choose only one answer:

- 0.05
- 0.10
- 0.20
- 0.50

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4.1.16. If the level of significance equals 0.10, then the area in one tail...

Author: David Bourgeois

If the level of significance equals 0.10, then the area in one tail of the t-distribution for a one-tailed hypothesis tests equals which of the following?

Please choose only one answer:

- 0.05
- 0.10
- 0.20
- 0.50

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4.1.17. If the rejection region in a one-tailed test is defined by a critic...

Author: David Bourgeois

If the rejection region in a one-tailed test is defined by a critical value of -1.65, then which of the following statements is true?

Please choose only one answer:

- The level of significance equals .05.
- The level of significance equals -0.05.
- The level of significance equals 0.10.
- The level of significance equals -0.10.

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4.1.18. If the rejection region in a two-tailed test is defined by critical...

Author: David Bourgeois

If the rejection region in a two-tailed test is defined by critical values of plus or minus 1.96, then which of the following statements is true?

Please choose only one answer:

- The sample size used for the hypothesis test is greater than 120, and the level of significance equals .05.
- The sample size used for the hypothesis test is less than 120, and the level of significance equals .05.
- The sample size used for the hypothesis test is greater than 120, and the level of significance equals .10.
- The sample size used for the hypothesis test is less than 120, and the level of significance equals .10.

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4.1.19. The average monthly cell phone bill of a random sample of 256 resid...

Author: David Bourgeois

The average monthly cell phone bill of a random sample of 256 residents of a city is $90 with a sample standard deviation of $24. What will be the 90% confidence interval for the mean monthly phone bills of all residents?

Please choose only one answer:

- $87.53 to $92.48
- $87.06 to $92.94
- $50.40 to $129.60
- $42.96 to $137.04

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4.1.20. The College Board reported that the average number of freshman clas...

Author: David Bourgeois

The College Board reported that the average number of freshman class applications to public colleges and universities was 6,000. During a recent application enrollment period, a sample of 32 colleges and universities showed that the sample mean number of freshman class applications was 5,812. Assume the population standard deviation was known and was equal to 565. Use this information to form a null hypothesis to determine if the data indicate a change in the mean number of applications. Which of the following accurately represents the null hypothesis of that test?

Please choose only one answer:

- $$ H_0: \mu \leq 6000 $$
- $$ H_0: \mu \geq 6000 $$
- $$ H_0: \mu \neq 6000 $$
- $$ H_0: \mu = 6000 $$

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4.1.21. The College Board reported that the average number of freshman clas...

Author: David Bourgeois

The College Board reported that the average number of freshman class applications to public colleges and universities was 6,000. During a recent application enrollment period, a sample of 32 colleges and universities showed that the sample mean number of freshman class applications was 5,812. Assume the population standard deviation was known and was equal to 565. Use this information to form a null hypothesis to determine if the data indicate a change in the mean number of applications. Based on this information, which of the following statements is true?

Please choose only one answer:

- To evaluate the null hypothesis and calculate the appropriate test statistic, you will need to refer to the Z-distribution.
- To evaluate the null hypothesis and calculate the appropriate test statistic, you will need to refer to the t-distribution with degrees of freedom equal 32.
- To evaluate the null hypothesis and calculate the appropriate test statistic, you will need to refer to the t-distribution with degrees of freedom equal 31.
- To evaluate the null hypothesis and calculate the appropriate test statistic, you will need to refer to the t-distribution with degrees of freedom equal 6,000.

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4.1.22. Which of the following best describes the P-value associated with a...

Author: David Bourgeois

Which of the following best describes the P-value associated with a hypothesis test?

Please choose only one answer:

- The p-value is the smallest alpha (?) for which we reject the null hypothesis.
- The p-value is the largest alpha (?) for which we reject the null hypothesis.
- The p-value is the smallest alpha (?) for which we fail to reject the null hypothesis.
- The p-value is the largest alpha (?) for which we fail to reject the null hypothesis.

Check the answer of this question online at QuizOver.com:
Question: Which of the following best describes the David Bourgeois Saylor

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4.1.23. A beverage filling machine, when in perfect adjustment, fills bottl...

Author: David Bourgeois

A beverage filling machine, when in perfect adjustment, fills bottles of Sierra Nevada Pale Ale® with 12 ounces of refreshment. A random sample of 51 bottles is selected and the contents are measured. The sample yields a mean content of 11.88 ounces with a sample standard deviation of 0.3565 ounces. Compute the value of the appropriate test statistic for carrying out the hypothesis.

Please choose only one answer:

- –2.4
- +2.4
- –1.96
- +1.96

Check the answer of this question online at QuizOver.com:
Question: A beverage filling machine when in perfect David Bourgeois @The Business

Flashcards:
http://www.quizover.com/flashcards/a-beverage-filling-machine-when-in-perfect-david-bourgeois-the-8323583?pdf=3044

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4.1.24. A new dental office opens in the town of Newsville. The owners of t...

Author: David Bourgeois

A new dental office opens in the town of Newsville. The owners of the dental practice decided to locate in Newsville based on the assumption that the new practice would see an average of 35 patients a month in the first year of business. After three months in business, the owners confidentially conclude they underestimated the average by more than 20 patients and think they should open a second location in town. However, the average for the first 3 months is a clerical error, and in truth, they have averaged just about 35 patients a month. The dental office's clerical error is an example of which of the following?

Please choose only one answer:

- A Type I error
- A Type II error
- Both a Type I and a Type II error
- The power of the hypothesis test

Check the answer of this question online at QuizOver.com:
Question: A new dental office opens in the town of David Bourgeois Saylor Business

Flashcards:
http://www.quizover.com/flashcards/a-new-dental-office-opens-in-the-town-of-david-bourgeois-saylor-busine?pdf=3044

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4.1.25. A study of college students in 1999 found that 202 out of 1,195 stu...

Author: David Bourgeois

A study of college students in 1999 found that 202 out of 1,195 students received work-study grants. A 2007 study found that 779 students out of 5,727 received such grants. We want to test if the proportion of students receiving work study grants declined between 2007 ( ) and 1999 ( ). Calculate the test statistic for this problem.

Please choose only one answer:

- +2.98
- –2.98
- +2.15
- +1.78

Check the answer of this question online at QuizOver.com:
Question: A study of college students in 1999 found David Bourgeois @The Business

Flashcards:
http://www.quizover.com/flashcards/a-study-of-college-students-in-1999-found-david-bourgeois-the--8025971?pdf=3044

Interactive Question:
http://www.quizover.com/question/a-study-of-college-students-in-1999-found-david-bourgeois-the--8025971?pdf=3044

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