CENGAGE | WEBASSIGN

EN

gw-50001791-2ff2c93d-b4d6-4303-9ff3-6612f5d4f89d_110441

Sign out

Home My Assignments Grades Communication
Calendar

← STAT 2910, section 91, Fall 2025

Assignment #3 (Homework)

IN:
Abdulkadir
University of Windsor, O

Due Date: MON, OCT 27, 2025 11:59 PM EDT

REQUEST EXTE

Current Score: 65 / 65 POINTS | 100.0 %

Scoring and Assignment Information

QUESTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
POINTS	6 / 6	4 / 4	2 / 2	6 / 6	4 / 4	1 / 1	1 / 1	1 / 1	1 / 1	5 / 5	3 / 3	3 / 3	3 / 3	8 / 8	3 / 3	4 / 4	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1	1

Instructions

This assignment covers chap 7 and 8

Assignment Submission

For this assignment, you submit answers by question parts. The number of submissions remaining for each question part only changes if you submit or c
answer.

Assignment Scoring

Your last submission is used for your score.

MendS

Random samples of size n were selected from populations with the means and variances given here. Find the mean and standard deviation of the sampling distributi sample mean in each case. (Round your answers to four decimal places.)

(a) $n = 25, \mu = 10, \sigma^2 = 9$

μ = 10.0000 ✓

σ = 0.6000 ✓

(b) $n = 100, \mu = 5, \sigma^2 = 4$

μ = 5.0000 ✓

σ = 0.2000 ✓

(c) $n = 12, \mu = 120, \sigma^2 = 1$

μ = 120.0000 ✓

σ = 0.2887 ✓

Resources

Read It

MendStatC4 7.E

Suppose a random sample of $n = 16$ observations is selected from a population that is normally distributed with mean equal to 107 and standard deviation equa

USE SALT

(a) Give the mean and the standard deviation of the sampling distribution of the sample mean $\bar{x}$.

mean 107 ✓

standard deviation 3 ✓

(b) Find the probability that $\bar{x}$ exceeds 115. (Round your answer to four decimal places.)

0.0038 ✓

(c) Find the probability that the sample mean deviates from the population mean $\mu = 107$ by no more than 5. (Round your answer to four decimal places

0.9044 ✓

You may need to use the appropriate appendix table to answer this question.

Resources

Read It

MendS

Allen Shoemaker derived a distribution of human body temperatures with a distinct mound shape. Suppose we assume that the temperatures of healthy humans approximately normal with a mean of 37° Celsius and a standard deviation of 0.2 degrees.

(a) If 160 healthy people are selected at random, what is the probability that the average temperature for these people is 36.78°C or lower? (Round you four decimal places.)

0.0000 ✓

(b) Would you consider an average temperature of 36.78°C to be an unlikely occurrence, given that the true average temperature of healthy people is 37

- ○ Since the probability is near 0.5, the average temperature of 36.78°C is likely.
- ○ Since the probability is extremely large, the average temperature of 36.78°C is very likely.
- ○ Since n is small, the average temperature of 36.78°C is unlikely.
- ○ Since n is large, the average temperature of 36.78°C is likely.
- ● Since the probability is extremely small, the average temperature of 36.78°C is very unlikely.

✓

Resources

Read It

MendS

Random samples of size n were selected from binomial populations with population parameters p given here. Find the mean and the standard deviation of the sampl distribution of the sample proportion $\hat{p}$ in each case. (Round your answers to four decimal places.)

(a) $n = 900$, $p = 0.7$

mean 0.7000 ✓

standard deviation 0.0153 ✓

(b) $n = 400$, $p = 0.9$

mean 0.9000 ✓

standard deviation 0.0150 ✓

(c) $n = 280$, $p = 0.8$

mean 0.8000 ✓

standard deviation 0.0239 ✓

Resources

Read It

MendStatC4 7.E.049.

A random sample of size $n = 60$ is selected from a binomial distribution with population proportion $p = 0.25$.

(a) What will be the approximate shape of the sampling distribution of $\hat{p}$?

- ○ skewed to the left
- ○ skewed to the right
- ◉ normal

✓

(b) What will be the mean and standard deviation (or standard error) of the sampling distribution of $\hat{p}$? (Round your answers to four decimal places.)

mean	0.2500	✓
standard deviation	0.0559	✓

(c) Find the probability that the sample proportion $\hat{p}$ is between 0.14 and 0.44. (Round your answer to four decimal places.)

0.9753 ✓

You may need to use the appropriate appendix table or technology to answer this question.

Resources

Read It

MendStatC4 7.TB.001.

Which of the following does NOT correctly describe a random sample?

- ○ Its summary measures are called statistics.
- ○ Each of the elements in it has the same likelihood of being selected.
- ◉ Its summary measures are called parameters.
- ○ It is a subset of the population of interest.

✓

Resources

Read It

MendSt

Random samples of size 36 each are taken from a large population whose mean is 120 and standard deviation is 39. In this case, which of the following are the mean and the standard error, respectively, of the sampling distribution of the sample mean?

- ○ 6.5 and 120
- ○ 39 and 120
- ◉ 120 and 6.5
- ○ 120 and 39

✓

Resources

Read It

MendSt

The scores of a class are normally distributed with a mean of 82 and a standard deviation of 8. What is the standard deviation of the sampling distribution of the mean, $\overline{x}$, if a sample of 64 students is selected at random from all students taking that course?

- ○ 10.25
- ○ 8.00
- ● 1.00
- ○ 1.25

✓

Resources

Read It

MendStatC4 7.TB.023.

Given a population proportion of $p = 0.4$ and a sample size of $n = 600$, what is the standard deviation of the sampling distribution of the sample proportion, $\hat{p}$?

- ○ 0.0102
- ○ 0.0240
- ● 0.0200
- ○ 0.1020

✓

Resources

Read It

MendStatC4 8.E.027.

Find a 90% confidence interval for a population mean μ for these values. (Round your answers to three decimal places.)

(a) $n = 135$, $\overline{x} = 0.82$, $s^2 = 0.085$

0.779 ✓ to 0.861 ✓

(b) $n = 60$, $\overline{x} = 29.8$, $s^2 = 3.61$

29.396 ✓ to 30.204 ✓

(c) Interpret the intervals found in part (a) and part (b).

- ○ In repeated sampling, 10% of all intervals constructed in this manner will enclose the population proportion.
- ● In repeated sampling, 90% of all intervals constructed in this manner will enclose the population mean.
- ○ There is a 10% chance that an individual sample proportion will fall within the interval.
- ○ 90% of all values will fall within the interval.
- ○ There is a 90% chance that an individual sample proportion will fall within the interval.

✓

You may need to use the appropriate appendix table or technology to answer this question.

Resources

Read It

MendS

A sample survey is designed to estimate the proportion of sports utility vehicles being driven in PEI. A random sample of 500 registrations are selected from a PI and 44 are classified as sports utility vehicles.

(a) Use a 95% confidence interval to estimate the proportion of sports utility vehicles in PEI. (Round your answers to three decimal places.)

0.063 ✔ to 0.113 ✔

(b) How can you estimate the proportion of sports utility vehicles in PEI with a higher degree of accuracy? (HINT: There are two answers. Select all that

- [ ] decrease the sample size n
- [ ] increase $z_{\alpha/2}$ by increasing the confidence coefficient
- [ ] conduct a non-random sample
- [x] decrease $z_{\alpha/2}$ by decreasing the confidence coefficient
- [x] increase the sample size n

✔

Resources

Read It

MendStatC4 8.E.046.

Independent random samples were selected from populations 1 and 2. The sample sizes, means, and variances are as follows.

	Population	
	1	2
Sample Size	40	64
Sample Mean	13.9	7.4
Sample Variance	1.34	4.19

(a) Find a 95% confidence interval for estimating the difference in the population means $(\mu_1 - \mu_2)$. (Round your answers to two decimal places.)

5.88 ✔ to 7.12 ✔

(b) Based on the confidence interval in part (a), can you conclude that there is a difference in the means for the two populations? Explain.

- ( ) Since the value $\mu_1 - \mu_2 = 0$ is in the confidence interval, it is likely that there is a difference in the population means.
- (•) Since the value $\mu_1 - \mu_2 = 0$ is not in the confidence interval, it is likely that there is a difference in the population means.
- ( ) Since the value $\mu_1 - \mu_2 = 0$ is in the confidence interval, it is not likely that there is a difference in the population means.
- ( ) Since the value $\mu_1 - \mu_2 = 0$ is not in the confidence interval, it is not likely that there is a difference in the population means.

✔

You may need to use the appropriate appendix table or technology to answer this question.

Resources

Read It

MendS

A small amount of the trace element selenium, 50–200 micrograms (μg) per day, is considered essential to good health. Suppose that random samples of $n_1 = n_2 = 50$ adults were selected from two regions of Canada and that a day's intake of selenium, from both liquids and solids, was recorded for each person. T and standard deviation of the selenium daily intakes for the 50 adults from region 1 were $\overline{x}_1 = 167.4$ and $s_1 = 22.2$ μg, respectively. The corresponding statistic 50 adults from region 2 were $\overline{x}_2 = 140.9$ and $s_2 = 17.5$ μg. Find a 95% confidence interval for the difference $(\mu_1 - \mu_2)$ in the mean selenium intakes for the two (Round your answers to three decimal places.)

18.665 ✔ μg to 34.335 ✔ μg

Interpret this interval.

- (●) In repeated sampling, 95% of all intervals constructed in this manner will enclose the difference in population means.
- ( ) There is a 95% chance that the difference between individual sample means will fall within the interval.
- ( ) 95% of all differences will fall within the interval.
- ( ) There is a 5% chance that the difference between individual sample means will fall within the interval.
- ( ) In repeated sampling, 5% of all intervals constructed in this manner will enclose the difference in population means.

✔

Resources

Read It

MendS

Even within a particular chain of hotels, lodging during the summer months can vary substantially depending on the type of room and the amenities offered. Sup we randomly select 50 billing statements from each of the computer databases of the Hotel A, the Hotel B, and the Hotel C chains, and record the nightly room r means and standard deviations for 50 billing statements from each of the computer databases of each of the three hotel chains are given in the table.

	Hotel A	Hotel B	Hotel C
Sample average ($)	145	175	120
Sample standard deviation	17.8	22.1	12.3

(a) Find a 95% confidence interval for the difference in the average room rates for the Hotel A and the Hotel C chains. (Round your answers to two decir

$ 19.00 to $ 31.00

(b) Find a 99% confidence interval for the difference in the average room rates for the Hotel B and the Hotel C chains. (Round your answers to two decir

$ 45.78 to $ 64.22

(c) Do the intervals in parts (a) and (b) contain the value $(\mu_1 - \mu_2) = 0$?

- ○ Yes, the interval in part (a) contains $(\mu_1 - \mu_2) = 0$.
- ○ Yes, the interval in part (b) contains $(\mu_1 - \mu_2) = 0$.
- ○ Yes, both intervals contain $(\mu_1 - \mu_2) = 0$.
- ◉ No, neither interval contains $(\mu_1 - \mu_2) = 0$.

Why is this of interest to the researcher?

- ◉ If $(\mu_1 - \mu_2) = 0$ is contained in the confidence interval, it is implied that there is no difference in the average room rates for the two hotels.
- ○ If $(\mu_1 - \mu_2) = 0$ is contained in the confidence interval, it is implied that the room rate for one of the hotels was $0.
- ○ If $(\mu_1 - \mu_2) = 0$ is contained in the confidence interval, it is implied that the average room rate for the two hotels was $0.
- ○ If $(\mu_1 - \mu_2) = 0$ is contained in the confidence interval, it is implied that there is a difference in the average room rates for the two hotels.
- ○ If $(\mu_1 - \mu_2) = 0$ is contained in the confidence interval, it is implied that there was an error in the database records.

(d) Do the data indicate a difference in the average room rates between the Hotel A and the Hotel C chains?

- ◉ Yes, the data indicate a difference in the average room rates between the Hotel A and the Hotel C chains.
- ○ No, the data do not indicate a difference in the average room rates between the Hotel A and the Hotel C chains.

Do the data indicate a difference in the average room rates between the Hotel B and the Hotel C chains?

- ◉ Yes, the data indicate a difference in the average room rates between the Hotel B and the Hotel C chains.
- ○ No, the data do not indicate a difference in the average room rates between the Hotel B and the Hotel C chains.

Resources

Read It

MendS

Does the maker of M&Ms® (Mars, Inc.) use the same proportion of red candies in its plain and peanut varieties? A random sample of 51 plain M&Ms contained 14 candies, and another random sample of 32 peanut M&Ms contained 5 red candies. (Use p_1 for the proportion of red candies in plain M&Ms and p_2 for the proport candies in peanut M&Ms.)

(a) Construct a 95% confidence interval for the difference in the proportions of red candies for the plain and peanut varieties ($p_1 - p_2$). (Round your ans three decimal places.)

-0.057 ✔ to 0.294 ✔

(b) Based on the confidence interval in part (a), can you conclude that there is a difference in the proportions of red candies for the plain and peanut var Explain.

- ○ Since the value $p_1 - p_2 = 0$ is not in the confidence interval, it is possible that $p_1 = p_2$. We should conclude that there is a difference in the proportic candies in plain and peanut M&Ms.
- ○ Since the value $p_1 - p_2 = 0$ is not in the confidence interval, it is possible that $p_1 = p_2$. We should not conclude that there is a difference in the prop red candies in plain and peanut M&Ms.
- ◉ Since the value $p_1 - p_2 = 0$ is in the confidence interval, it is possible that $p_1 = p_2$. We should not conclude that there is a difference in the proportic candies in plain and peanut M&Ms.
- ○ Since the value $p_1 - p_2 = 0$ is in the confidence interval, it is possible that $p_1 = p_2$. We should conclude that there is a difference in the proportion o candies in plain and peanut M&Ms.

Resources

Read It

MendS

Last year's records of auto accidents occurring on a given section of highway were classified according to whether the resulting damage was $1,000 or more and a physical injury resulted from the accident. The data follows.

	Under $1,000	$1,000 or More
Number of Accidents	35	48
Number Involving Injuries	9	24

(a) Estimate the true proportion of accidents involving injuries when the damage was $1,000 or more for similar sections of highway. (Round your answe decimal places.)

0.500 ✔

Find the 95% margin of error. (Round your answer to three decimal places.)

0.141 ✔

(b) Estimate the true difference in the proportion of accidents involving injuries for accidents with damage under $1,000 and those with damage of $1,0 Use a 95% confidence interval. (Use $p_1 - p_2$ where p_1 is the proportion of accidents involving injuries with damage under $1,000 and p_2 is the proportic accidents involving injuries with damage of $1,000 or more. Round your answers to three decimal places.)

-0.445 ✔ to -0.040 ✔

You may need to use the appropriate appendix table or technology to answer this question.

Resources

Read It

MendStatC4 8.TB.003.

From a sample of 200 items, 12 items are defective. In this case, what will be the point estimate of the population proportion defective?

- (●) 0.06
- ( ) 16.67
- ( ) 0.12
- ( ) 12

Resources

Read It

MendStatC4 8.TB.007.

What is a sample statistic such that the mean of all its possible values differs from the population parameter that the statistic seeks to estimate?

- ( ) an inconsistent estimator
- ( ) an efficient estimator
- ( ) a Bayesian estimator
- (●) a biased estimator

Resources

Read It

MendStatC4 8.T

Whenever a sampled population is normally distributed, or whenever the conditions of the Central Limit Theorem are fulfilled, what may be said of the sample m

- (●) It is an unbiased estimator of the population mean, μ, because the mean of the sampling distribution of the sample mean equals μ.
- ( ) It is an efficient estimator of the population mean, μ, because the mean of the sampling distribution of the sample proportion equals p.
- ( ) It is a consistent estimator of the population mean, μ, because the mean of the sampling distribution of the sample mean equals μ.
- ( ) It is an efficient estimator of the population mean, μ, because the mean of the sampling distribution of the sample mean equals μ.

Resources

Read It

MendSt

Which of these options provides the best interpretation of a 90% confidence interval estimate of the population mean μ?

- ○ We are 90% confident that 10% the values of the sample means $\overline{x}$ will result in a confidence interval that includes the population mean μ.
- ○ We are 90% confident that we have selected a sample whose range of values does not contain the population mean μ.
- ○ There is a 90% probability that the population mean μ will lie between the lower confidence limit (LCL) and the upper confidence limit (UCL).
- ◉ If we repeatedly draw samples of the same size from the same population, 90% of the values of the sample means $\overline{x}$ will result in a confidence interval that i the population mean μ.

Resources

Read It

MendSt

In developing an interval estimate for a population mean, a sample of 40 observations was used. The interval estimate was 17.25 ± 2.42. If the sample size had instead of 40, what would the interval estimate have been?

- ○ 17.25 ± 9.68
- ◉ 17.25 ± 1.21
- ○ 69.00 ± 9.68
- ○ 34.50 ± 4.82

Resources

Read It

MendSt

To what does the term "confidence level" refer?

- ○ the range of values among which an unknown population parameter can presumably be found
- ○ the absolute number of interval estimates that can be expected to contain the actual value of the parameter being estimated when the same procedure of int construction is used again and again
- ○ the sum of an estimator's squared bias plus its variance, which indicates the degree to which it is consistent, efficient, and unbiased
- ◉ the percentage of interval estimates that can be expected to contain the actual value of the parameter being estimated when the same procedure of interval construction is used again and again

Resources

Read It

MendS

Independent random samples were selected from binomial populations 1 and 2. Suppose you wish to estimate $(p_1 - p_2)$ correct to within 0.04, with probability 0.99, and you plan to use equal sample sizes—that is, $n_1 = n_2$. How large should n_1 and n_2 be? (Assume maximum variation. Round your answer up to the near number.)

$n_1 = n_2 =$ 2074 ✔

You may need to use the appropriate appendix table or technology to answer this question.

Resources

Read It

MendSt

When two independent random samples of sizes n_1 and n_2 have been selected from populations with means μ_1 and μ_2 and variances $\sigma_1^{\,2}$ and $\sigma_2^{\,2}$, respectively, following is a property of the sampling distribution of $\overline{x}_1 - \overline{x}_2$?

- (●) If the sampled populations are normally distributed, then the sampling distribution of $\overline{x}_1 - \overline{x}_2$ is exactly normal regardless of the sizes of n_1 and n_2.
- ( ) If the sampled populations are normally distributed, then the sampling distribution of $\overline{x}_1 - \overline{x}_2$ is exactly normal only when n_1 and n_2 are both 30 or more.
- ( ) If the sampled populations are not normally distributed, then the sampling distribution of $\overline{x}_1 - \overline{x}_2$ is approximately normally distributed regardless of the size and n_2.
- ( ) If the sampled populations are not normally distributed, then the sampling distribution of $\overline{x}_1 - \overline{x}_2$ is approximately normally distributed only if $n_1 + n_2$ is 30 more.

Resources

Read It

MendSt

Suppose you wish to estimate a population mean μ based on a sample of n observations. What sample size is required if you want your estimate to be within 2 s deviations of μ with probability equal to 0.95, if you know the population standard deviation σ is 12?

- (●) 139
- ( ) 196
- ( ) 98
- ( ) 239

✔

Resources

Read It

26. **[1 / 1 Points]** DETAILS MY NOTES PREVIOUS ANSWERS ASK YOUR TEACHER PRACTICE AI

MendSta

Independent random samples of $n_1 = n_2 = n$ observations are to be selected from each of two populations 1 and 2. If you wish to estimate the difference betwe population means correct to within 0.15, with probability equal to 0.90, how large should n_1 and n_2 be? Assume that you know $\sigma_1^2 \approx \sigma_2^2 \approx 26.2$. (Round your a the nearest whole number.)

USE SALT

$n_1 = n_2 =$ 6303 ✔ observations

You may need to use the appropriate appendix table to answer this question.

Resources

Read It

VIEW PREVIOUS QUESTION Question 26 of 26

Home My Assignments Request Extension