Assignment 6.1 (Homework)

Current Score

QUESTION	1	2	3	4
POINTS	4/4 ✓	2/2 ✓	2/2 ✓	2/2 ✓

TOTAL SCORE

10/10 100.0%

Due Date

TUE, DEC 5, 2023
10:59 PM GMT+2

Request Extension

Instructions

1) You are allowed for 2 submissions.
2) There will be no due date extensions.
3) Do all parts except part f of Question 1.
4) Do all parts of Question 2.
5) Do all parts except part b of Q3.
6) Do all parts of Q4.

Assignment Submission & Scoring

Assignment Submission

For this assignment, you submit answers by questions.

Assignment Scoring

Your best submission for each entire question is used for your score.

1. [4/4 Points] DETAILS PREVIOUS ANSWERS ROSBIOSTAT8 6.E.005-010.S.

MY NOTES ASK YOUR TEACHER PRACTICE ANOTHER

Pulmonary Disease

The data in the table below concern the mean triceps skin-fold thickness in a group of normal men and a group of men with chronic airflow limitation.

Group	Mean	sd	*n*
Normal	1.31	0.56	40
Chronic airflow limitation	0.97	0.47	32

You can use the Distribution Calculators page in SALT to find percentiles to answer parts of this question.

(a) What is the standard error of the mean for the normal group? (Round your answer to four decimal places.)

0.0885 ✓

What is the standard error of the mean for the chronic airflow limitation group? (Round your answer to four decimal places.)

0.0831 ✓

(b) Assume that the central-limit theorem is applicable. What does it mean in this context? (Round your answers to four decimal places.)

It means that the distribution of mean triceps skin-fold thickness from repeated samples of size 40 drawn from the population of normal men can be considered to be normal ✓ with mean = 1.3100 ✓ and variance = 0.0078 ✓ . It also means that the distribution of mean triceps skin-fold thickness from repeated samples of size 32 drawn from the population of men with chronic airflow limitation can be considered to be normal ✓ with mean = 0.9700 ✓ and variance = 0.0069 ✓ .

(c) Find the upper 1st percentile of a *t* distribution with 17 *df*. (Round your answer to two decimal places.)

2.57 ✓

(d) Find the lower 10th percentile of a *t* distribution with 27 *df*. (Round your answer to two decimal places.)

-1.31 ✓

(e) Find the upper 2.5th percentile of a *t* distribution with 8 *df*. (Round your answer to two decimal places.)

2.31 ✓

2. [2/2 Points] DETAILS PREVIOUS ANSWERS ROSBIOSTAT8 6.E.011-017.S.

MY NOTES ASK YOUR TEACHER PRACTICE ANOTHER

The data in the following table are a sample from a larger data set collected on people discharged from a selected Pennsylvania hospital as part of a retrospective chart review of antibiotic usage in hospitals. Regard this hospital as typical of Pennsylvania hospitals.

Data Table

Id	Duration of Hospital Stay	Age	Sex	First Temperature Following Admission	First WBC (× 1,000) Following Admission	Received Antibiotic	Received Bacterial Culture	Service
1	5	30	Female	99	7	No	No	Medical
2	10	73	Female	98	4	No	Yes	Medical
3	6	40	Female	99	11	No	No	Surgery
4	11	47	Female	98.2	3	No	No	Surgery
5	5	25	Female	98.5	12	No	No	Surgery
6	14	82	Male	96.8	5	Yes	No	Surgery
7	30	60	Male	99.5	9	Yes	Yes	Medical
8	11	56	Female	98.6	8	No	No	Medical
9	17	43	Female	98	6	No	No	Medical
10	3	50	Male	98	11	No	Yes	Surgery
11	9	59	Female	97.6	8	No	Yes	Medical
12	3	4	Male	97.8	2	No	No	Surgery
13	8	22	Female	99.5	10	Yes	No	Surgery
14	8	33	Female	98.4	13	Yes	Yes	Surgery
15	5	20	Male	98.4	10	No	Yes	Surgery
16	5	32	Male	99	10	No	No	Surgery

17	7	36	Male	99.2	7	Yes	No	Surgery
18	4	69	Male	98	7	No	No	Surgery
19	3	47	Male	97	6	Yes	No	Medical
20	7	22	Male	98.2	5	No	No	Surgery
21	9	11	Male	98.2	9	No	No	Surgery
22	11	19	Male	98.6	13	Yes	No	Surgery
23	11	67	Female	97.6	5	No	No	Medical
24	9	43	Female	98.6	6	No	No	Surgery
25	4	41	Female	98	6	No	No	Medical

USE SALT

(a) Compute a 95% CI for the mean age (in years). (Enter your answer using interval notation. Round your numerical values to two decimal places.)

$$(32.94,49.54)

years

(b) Compute a 95% CI for the mean white blood count (in thousands) (use the variable named "First WBC (x 1000) following admission") following admission. (Enter your answer using interval notation. Round your numerical values to two decimal places.)

$$(6.47,8.97)

thousands

(c) Compute a 90% CI for the mean white blood count (in thousands) (use the variable named "First WBC (x 1000) following admission") following admission. (Enter your answer using interval notation. Round your numerical values to two decimal places.)

$$(6.69,8.75)

thousands

(d) What is the relationship between your answers to (b) and (c)?

- The 90% confidence interval is narrower than the 95% confidence interval since we are requiring more confidence.
- (•) The 90% confidence interval is narrower than the 95% confidence interval since we are requiring less confidence. ✓
- The 90% confidence interval is wider than the 95% confidence interval since we are requiring more confidence.
- The 90% confidence interval is wider than the 95% confidence interval since we are requiring less confidence.

(e) What is the best point estimate of the percentage of males among patients discharged from Pennsylvania hospitals?

48 ✓ %

(f) What is the standard error of the estimate of the percentage of males among patients discharged from Pennsylvania hospitals? (Round your answer to four decimal places.)

9.9920 ✓ %

(g) Provide a 95% CI for the percentage of males among patients discharged from Pennsylvania hospitals. (Enter your answer using interval notation. Round your numerical values to two decimal places.)

$$(28.42,67.58)

✓ %

Need Help? Read It

3. [2/2 Points] DETAILS PREVIOUS ANSWERS ROSBIOSTAT8 6.E.030-032.S.

MY NOTES ASK YOUR TEACHER PRACTICE ANOTHER

Pharmacology

Suppose we want to estimate the concentration (µg/mL) of a specific dose of ampicillin in the urine after various periods of time. We recruit 23 volunteers who have received ampicillin and find they have a mean concentration of 6.0 µg/mL with a standard deviation of 2.0 µg/mL. Assume the underlying population distribution of concentrations is normally distributed.

You can use SALT to answer parts of this question.

(a) Find a 95% CI for the population mean concentration (in µg/mL). (Enter your answer using interval notation. Round your numerical values to two decimal places.)

(5.14,6.86)

µg/mL

(c) What is the minimum sample size that would be needed to ensure that the length of the CI in part (a) is 0.5 µg/mL assuming the sample standard deviation remains at 2.0 µg/mL?

246

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4. [2/2 Points] DETAILS PREVIOUS ANSWERS ROSBIOSTAT8 6.E.027-029.S.

2/2 Submissions Used

MY NOTES ASK YOUR TEACHER PRACTICE ANOTHER

Sexually Transmitted Disease

Suppose a clinical trial is conducted to test the efficacy of a new drug, spectinomycin, for treating gonorrhea in females. Sixty-four patients are given a 4-g daily dose of the drug and are seen 1 week later, at which time 8 of the patients still have gonorrhea.

USE SALT

(a) What is the best point estimate for p, the probability of a failure with the drug?

$\hat{p}$ = 0.125 ✓

(b) What is a 95% CI for p? (Enter your answer using interval notation. Round your numerical values to three decimal places.)

$$(0.044,0.206)

✓

(c) Suppose we know penicillin G at a daily dose of 4.8 megaunits has a 10% failure rate. What can be said in comparing the two drugs?

Since the 10% failure rate for penicillin is within ✓ the bounds of the 95% CI, we can conclude that it is plausible that spectinomycin is equally ✓ effective than penicillin G.

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