Applied Statistics From Bivariate Through Multivariate Techniques 2nd Edition Warner Test Bank

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Chapter 2: Basic Statistics, Sampling Error, and Confidence Intervals

Multiple Choice

- 1. Which notation represents a population mean:
- a. M
- b. μ c. z
- d. s

Ans: a

2. Which notation represents a sample standard deviation:

a. M

b. μ

c. z

d. s

Ans: d

3. When different sets of data of the same size are randomly chosen from a population, the resulting variation in values is called ______.:

a. confidence interval

b. sampling error

c. standard deviation d. magnitude of error

Ans: b

4. The formula for the sample mean is $\sum X/N$. When N increases and $\sum X$ stays the same, the:

a. sample mean increases.

b. sample mean decreases.

c. population mean increases.

d. population mean decreases.

Ans: b

5. If a list of math exam scores is provided, what would the best estimate of a randomly selected student's math score:

a. mode

b. median

c. mean

d. sum of the squared deviations

Ans: c

6. The inclusion of an extreme outlier will affect which statistic the most:

a. mode

b. median

c. mean

d. sum of the squared deviations

Ans: c

7. The mean, median, and mode are the same value for what type of distribution:

a. skewed

b. normal

c. uniform

d. triangular

Ans: b

8. What is the minimum value for the sum of the squared deviations:

a. -∞

b. -1

c. 0 d. ∞

u. ...

Ans: c

9. The statistic calculated by summing the deviations, squaring the result, and then dividing by the sample size minus one is the sample:

a. standard deviation

b. variance

c. mean

d. median

Ans:b

10. The proportion of the area of a normal distribution greater than 12.1% is z=____. Use Appendix A of your textbook:

a. 0.30

b. 0.97

c. 1.17

d. 2.25

Ans: c

11. As N increases, the standard error of the mean: a. increases

b. decreasesc. remains constantd. varies randomlyAns: b

12. As the standard deviation decreases, the standard error of mean:a. increasesb. decreasesc. remains constantd. varies randomlyAns: b

13. The difference between the population mean and the sample mean is called the:a. estimation errorb. standard errorc. magnitude of the differenced. prediction errorAns: a

14. At what degrees of freedom is a *t* distribution similar to a normal distribution:
a. 25
b. 50
c. 75
d. 100
Ans: d

15. Which of the following statistics is <u>not</u> used in the calculation of a confidence interval:a. population meanb. standard errorc. critical valued. sample meanAns: d

True/False

1. The degrees of freedom for a statistic provides the number of independent pieces of information. Ans: True 2. Dividing the sum of squares by the sample size overestimates the population variance. Ans: False

3. Usually, we know the population mean and population standard deviation for a given data set. Ans: False

4. As the degrees of freedom for the *t* distribution increases, the shape of the distribution becomes leptokurtic. Ans: True

5. The definition of a confidence interval is a 95% chance of including the population parameter between the upper and lower limits. Ans: False

Short Answer

Calculate the sample mean for the following values of systolic blood pressure: 130, 152, 120, 107, 110, 143.
 Ans: 127.00

2. Calculate the sample standard deviation for the following values of systolic blood pressure: 130, 152, 120, 107, 110, 143. Ans: 18.04

3. Compute the sample standard error of the mean for the following values of systolic blood pressure: 130, 152, 120, 107, 110, 143. Ans: 7.37

4. Calculate the 95% confidence interval of the mean for the following values of systolic blood pressure: 130, 152, 120, 107, 110, 143. Ans: [108.06, 145.94]

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5. Which scores are used to determine the proportion of subjects whose test scores lie between -X and +X? Ans: z scores

Essay

1. Contrast the standard deviation and the standard error.

Ans: SD shows the variation around a single measurement of the mean. SE shows the variation around the average of repeated measurements of the mean.

2. What is the meaning of a confidence interval?

Ans: Whether in a sample or a population, the CI is a range of values above and below a sampl statistic that is likely to include that statistic. For example, in a 95% CI, if hundreds of intervals were constructed from random sampling, we would expect that 95% of the CI's would contain the sample statistic.