

Measures of Differences

Assignment: Heiman, Chapter 5

Terms you should know.

Range
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* Deviation Score
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* Variance
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* Standard Deviation
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Unbiased estimate of variability
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Biased estimate of variability
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* Sum of Squares
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* Degrees of freedom
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Formulas and Symbols You Should Know

* σ

* σ^2

* S

* S^2

* s or \hat{S}

* s^2 or \hat{S}^2

* $\frac{\Sigma(X - \bar{X})^2}{N}$

* $\frac{\Sigma(X - \bar{X})^2}{N - 1}$

* $\sqrt{\frac{\Sigma(X - \bar{X})^2}{N}}$

* $\sqrt{\frac{\Sigma(X - \bar{X})^2}{N - 1}}$

Concepts You Should Master

1. What is meant by each of the following?
 - a. Unbiased estimate of the population variance?
 - b. Biased estimate of the population variance?
2. When would you use the unbiased estimate of the standard deviation?
3. When should you use the biased standard deviation formula?

Homework #5: Calculations You Should Master

Name: _____ (This is my work, and my work alone.)

X	$X - \bar{X}$	$(X - \bar{X})^2$	Y	$Y - \bar{Y}$	$(Y - \bar{Y})^2$	Z	$Z - \bar{Z}$	$(Z - \bar{Z})^2$
40			43			55		
40			42			50		
40			41			45		
40			40			40		
40			39			35		
40			38			30		
40			37			25		

- Just glancing at each of these distributions, which do you think has the largest standard deviation?
- Compute the deviation scores for each of these distributions.
 - What is $\Sigma(X - \bar{X})$? ____
 - What is $\Sigma(Y - \bar{Y})$? _____
 - What is $\Sigma(Z - \bar{Z})$? ____
 - Why did these scores turn out the way they did?
- Compute the standard deviation for each of these distributions.
 - What is the standard deviation for group X? _____
 - What is the standard deviation for group Y? _____
 - What is the standard deviation for group Z? _____

4. Suppose you were asked to teach a class in statistics, and you were given a choice of one of three classes. The classes were given a standardized test of knowledge of math and algebra. The national average on this test is 50, and the national standard deviation is 10. All you know about the classes are the scores on the tests. These scores are shown below.

	Class A	Class B	Class C
N	25	27	24
Mean Test Score	45	55	50
Standard Deviation	6	19	12

- a. Which class had the highest scores? _____
 - b. Which class had the lowest scores? _____
 - c. Which class had the highest amount of variability? _____
 - d. Which class had the lowest amount of variability? _____
 - e. Which of the three classes would you prefer to teach? Why?
5. Using SPSS compute the descriptive statistics and histogram for Assertiveness raw score and Conformity raw score from the class data set.
- a. Which set of scores is more skewed?
 - b. Which has the higher mean?
 - c. Which has the higher standard deviation?