

Chapter 3

1. Given the following information:
Standard deviation = 8
Coefficient of variation = 64%
The mean would then be
 - a. 12.5
 - b. 8
 - c. 0.64
 - d. 1.25
2. For the following observations from a sample of x and y , calculate the covariance, the correlation coefficient between x and y , indicate what kind of relationship (if any) exist between x and y .

| x | y |
|-----|-----|
| 8 | 4 |
| 5 | 5 |
| 3 | 9 |
| 2 | 12 |
| 1 | 14 |

3. A sample of twelve families was taken. Each family was asked how many times per week they dine in restaurants. Their responses are given below.

2 1 0 2 0 2 1 2 0 2 1 2

Using this data set, compute the

- f. variance
 - g. standard deviation
 - h. coefficient of variation
4. The average wage of Tennessee cashiers is \$14 per hour with a standard deviation of \$4.20. In Georgia, the average wage of cashiers is \$16 with a standard deviation of \$4.40. In which state do the wages of cashiers appear to be more dispersed?

1. Answer: a

2. Answer:

| x | \bar{x} | x - \bar{x} | (x - \bar{x})² | y | \bar{y} | y - \bar{y} | (y - \bar{y})² | (x - \bar{x})(y - \bar{y}) | |
|----------|-----------|----------------------|---|----------|-----------|----------------------|---|---|-------|
| 6 | 3 | 3 | 9 | 4 | 9 | -5 | 25 | -15 | |
| 4 | 3 | 1 | 1 | 5 | 9 | -4 | 16 | -4 | |
| 3 | 3 | 0 | 0 | 9 | 9 | 0 | 0 | 0 | |
| 2 | 3 | -1 | 1 | 12 | 9 | 3 | 9 | -3 | |
| 0 | 3 | -3 | 9 | 15 | 9 | 6 | 36 | -18 | |
| 15 | 15 | 0 | 20 | 45 | 45 | 0 | 86 | -40 | Total |

$$s_{xy} = \frac{-40}{5-1} = -10,$$

$$s_x^2 = \frac{20}{5-1} = 5, \quad s_y^2 = \frac{86}{5-1} = 21.5 \rightarrow r_{xy} = \frac{s_{xy}}{s_x s_y} = \frac{-10}{\sqrt{5}\sqrt{21.5}} = -0.965$$

A strong negative linear association between x and y exists.

3. Answers:

f. 0.75

g. 0.866

h. 69.28%

4. Answer:

The coefficient of variation in Tennessee = 30%. The coefficient of variation in Georgia = 27.5%. Therefore, Tennessee shows a more dispersed distribution.