Descriptive Statistics: Worked Dataset

WORKED PRACTICE • UNIVERSITY STATISTICS

Consider five fictional measurements: 4, 6, 7, 7, 11. Use the sorted dataset to compute central tendency and spread. The arithmetic is shown, so you can check every step.

1. Measures of central tendency

Measure	Worked calculation	Result
Mean	(4 + 6 + 7 + 7 + 11) ÷ 5 = 35 ÷ 5	7
Median	Middle value of sorted 4, 6, 7, 7, 11	7
Mode	Most frequent value	7

2. Range and deviations

Range = maximum − minimum = 11 − 4 = 7. Deviations from mean 7 are −3, −1, 0, 0, +4. Their squared values are 9, 1, 0, 0, 16; sum = 26.

3. Variance and standard deviation

Interpretation	Variance	Standard deviation
Population: these 5 are all observations	26 ÷ 5 = 5.2	sqrt(5.2) ≈ 2.280
Sample: these 5 are a sample	26 ÷ (5 − 1) = 6.5	sqrt(6.5) ≈ 2.550

Why the denominator differs: population variance divides by N; conventional unbiased sample variance divides by n−1. Decide which formula fits your problem before calculating.

4. Interpretation

The mean, median and mode all equal 7 for these observations. The value 11 is furthest above the mean and contributes 16 to the squared deviation sum. Standard deviation summarizes spread in the same units as the input variable.

Self-check exercise

Find the mean and median of 3, 4, 8, 9. Is the resulting mean an observed value? Explain.

Answer: (3 + 4 + 8 + 9) ÷ 4 = 6. The median is (4 + 8) ÷ 2 = 6. Neither needs to be an observed value.

Useful references

NIST Engineering Statistics Handbook • Statistics tutoring guide • Request statistical-analysis tutoring

This original example is for independent learning and is not a completed university assessment.