Descriptives

Data

The following data set reflects one sample of eight individuals measured on one variable. The data are presented in a format suitable for entry into statistical software.

	Outcome
1	.00
2	.00
3	3.00
4	5.00
5	4.00
6	7.00
7	4.00
8	9.00

Computer Output

The following tables represent typical output from statistical software. Options, labels, and layout vary from program to program.

The frequency distribution can be used to determine the descriptive statistics.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0.00	2	25.0	25.0	25.0
	3.00	1	12.5	12.5	37.5
	4.00	2	25.0	25.0	62.5
	5.00	1	12.5	12.5	75.0
	7.00	1	12.5	12.5	87.5
	9.00	1	12.5	12.5	100.0
	Total	8	100.0	100.0	

The table of descriptive statistics shows the key elements to be calculated.

	N	Mean	Std. Deviation
Outcome	8	4.000	3.117

Calculations

Mean: The mean (or arithmetic average) is calculated as an unbiased estimate of the population mean. Here, the mean is determined as the average of the scores weighted by their frequencies:

$$M = \frac{\sum(fY)}{N} = \frac{(2 \times 0) + (1 \times 3) + (2 \times 4) + (1 \times 5) + (1 \times 7) + (1 \times 9)}{8} = 4.000$$

Sum of Squares: The Sum of Squares is the basic measure of the variability of the scores. Formally, it is the sum of the weighted deviations of the scores about the mean.

$$SS = \sum f(Y - M)^2$$
$$= 2(0 - 4.000)^2 + 1(3 - 4.000)^2 + 2(4 - 4.000)^2 + 1(5 - 4.000)^2 + 1(7 - 4.000)^2 + 1(9 - 4.000)^2 = 68.000$$

Mean Squares: Mean Squares (also known as Variance) is a function of the Sum of Squares. It is calculated as an unbiased estimate of the population variance.

$$MS = \frac{SS}{(N - 1)} = \frac{68.000}{7} = 9.714$$

Standard Deviation: Standard Deviation is a function of Mean Squares. It is also calculated as an unbiased estimate of the population standard deviation.

$$SD = \sqrt{MS} = \sqrt{9.714} = 3.117$$

APA Style

The purpose of the descriptive statistics is to provide the reader with an idea about the basic elements of the group(s) being studied. Note that this also forms the basis of the in-text presentation of descriptive statistics for other inferential analyses. Both of the following versions present the required information, though the second focuses more on the interpretation of the statistic.

The eight participants had a mean Outcome of 4.00 (*SD* = 3.12).

The participants (*N* = 8) had a low mean Outcome score (*M* = 4.00, *SD* = 3.12).