Confidence Interval for a Mean

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Outcome	8	88.9%	1	11.1%	9	100.0%

Descriptives

			Statistic	Std. Error
Outcome	Mean		4.0000	1.10195
	95% Confidence Interval for Mean	Lower Bound	1.3943	
		Upper Bound	6.6057	
	5% Trimmed Mean		3.9444	
	Median		4.0000	
	Variance		9.714	
	Std. Deviation		3.11677	
	Minimum		.00	
	Maximum		9.00	
	Range		9.00	
	Interquartile Range		5.75	
	Skewness		.151	.752
	Kurtosis		-.467	1.481

The values of the descriptive statistics in this tables – like the "Mean", "Variance", and "Std. Deviation" – are identical to the values that would be provided by the "Frequencies" or "Descriptives" commands. See the earlier annotated output for details of how these are computed from frequency distributions.

The "Standard Error of the Mean" provides an estimate of how spread out the distribution of all possible random sample means would be. Here it's calculated as:

$$SE_M = \frac{SD}{\sqrt{N}} = \frac{3.117}{\sqrt{8}} = 1.102$$

This section provides a confidence interval around (centered on) the "Mean." Calculation requires the appropriate critical value. Specifically, the *t* statistic (with 7 *df*) that has a probability of .05 equals 2.365. As a result:

$$CI_M = M \pm (t_{CRITICAL})(SE_M)$$
$$= 4.000 \pm (2.365)(1.102)$$

Thus, the researcher estimates that the true population mean is somewhere between 1.394 and 6.606 (knowing that the estimate could be incorrect).