

Independent t-test — Analysis of 2-Between-Group Data with a Quantitative DV

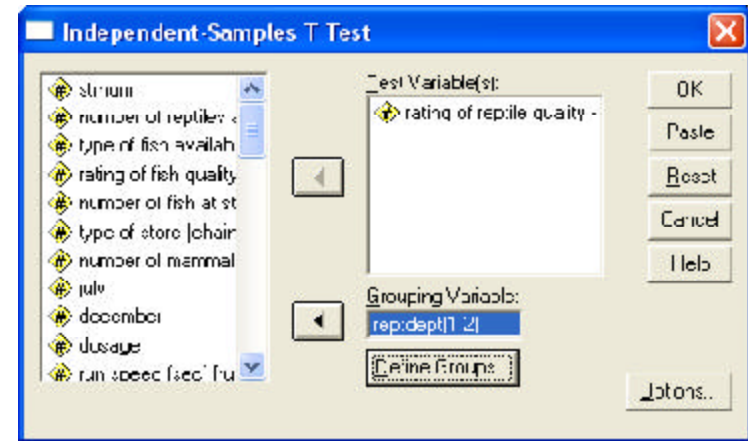
Application: Compare the means of a quantitative variable obtained from 2 independent groups.

Research Hypothesis: The researcher hypothesized that stores with separate reptile departments would have reptiles of better overall quality than stores that did not have separate reptile departments.

H0: for this analysis: Pet shops which do not have separate reptile departments have the same mean reptile quality ratings as shops that do have separate reptile departments.

Analyze → Compare Means → Independent-Samples T-Test

- highlight the “Test Variable” (Dependent variable) you want (be sure it is quantitative) and click the arrow
- highlight the “Grouping Variable” (IV) you want (Be sure it is qualitative) and click the arrow
- click the “Define Groups” button
- enter the value of the lower-coded group in the “Group 1” window
- enter the value of the higher-coded group in the “Group 2” window



Group Statistics

'type of reptile department'		N	Mean	Std. Deviation	Std. Error Mean
'rating of reptile quality - 1-10 scale'	not separate	6	4.00	1.90	.77
	separate	6	7.33	1.86	.76

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
'rating of reptile quality - 1-10 scale'	Equal variances assumed	.000	1.000	-3.071	10	.012
	Equal variances not assumed			-3.071	9.996	.012

Levene's is a test of whether the two groups have similar variation. If you retain the H0: that the two have similar variability ($p > .05$), then you will use the “Equal” variance t-test below. If you reject the H0: that the two have similar variability ($p < .05$), then you will use the “Un-equal” variance t-test below.

This is the p-value for Levene's test. Based on the results of Levene's test, we would use the “Equal” variance t-test, which reveals a significant difference between the means of the two groups.

Reporting the Results

Those stores without separate reptile departments displayed reptiles with a mean quality rating of 4.0 (std = 1.90), whereas those that did have separate departments had a mean rating of 7.33 (std = 1.86). As hypothesized, pet stores with separate reptile departments had significantly higher mean ratings than those without separate departments ($t(10) = -3.07, p = .012$).