

Friedman's Two-way Analysis By Ranks -- Analysis of 2-Within-Group Data with a Quantitative DV

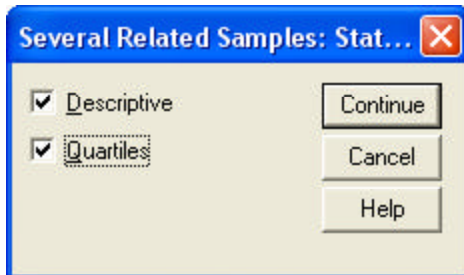
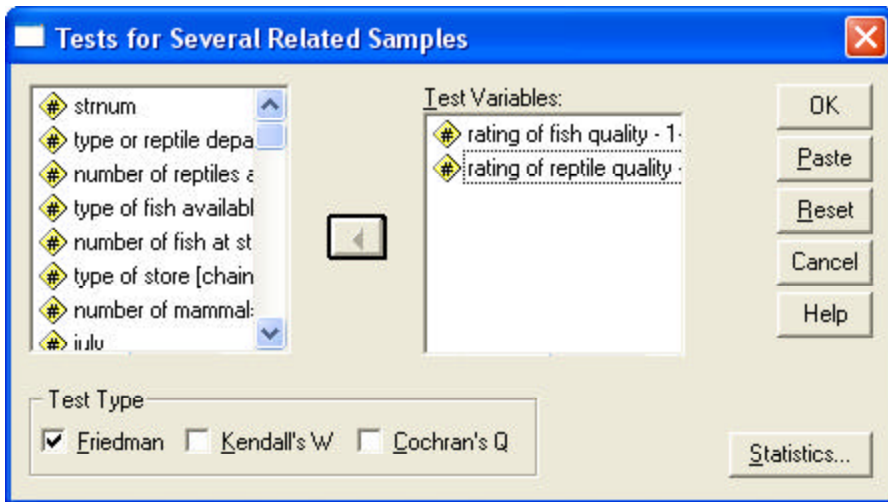
Application: To compare the distributions of scores of two quantitative variables (which are either ordinal or nonnormally distributed or from a too-small sample) obtained from dependent samples (repeated measures or matched groups). The scores might be the same variable measured at different times or under different conditions, comparable variables measured at the same time, or some combination. Friedman's is often used as a nonparametric substitute for the dependent (repeated measures or within-subject) t-test.

Research Hypothesis: The researcher hypothesized that a store's fish would be of higher quality than its reptiles, because of the greater difficulty obtaining and maintaining healthy reptiles.

Ho: The quality ratings of reptiles and fish displayed by pet stores have the same distributions.

Analyze/Statistics → Nonparametric Tests → K Related Samples

- highlight each of the two quantitative response variables and click the arrow to move them to the "Test Variables" window
- be sure "Friedman" is checked
- Click statistics and be sure "Quartiles" is checked



Descriptive Statistics

	N	Percentiles		
		25th	50th (Median)	75th
'rating of reptile quality - 1-10 scale'	12	4.00	6.00	7.75
'rating of fish quality - 1-10 scale'	12	5.25	7.00	8.75

Univariate statistics for both of the variables (remember Q1 and Q3 are the 25th and 75th percentiles, respectively).

SPSS presents the χ^2 version of this significance test

Test Statistics^a

N	12
Chi-Square	1.600
df	1
Asymp. Sig.	.206

a. Friedman Test

Reporting Results:

Contrary to the research hypothesis, there was no difference between the distribution of quality rating of fish (Median = 7.00, IQR = 5.25 - 8.75) and reptiles (Median = 6.00, IQR = 4.00 - 7.75) in these stores (based on Friedman's ANOVA, $\chi^2(1) = 1.60$, $p = .206$).