



**StatSoft®**  
**Business White Paper**

## **Weighted Means Option in Repeated Measures Analysis (GLM)**

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## Client Question

A client noticed that when he chooses the weighted means option (for the graphic means plot with confidence intervals) in a repeated measures analysis (in GLM), he does not get means with confidence intervals (or error bars) plots like he does with least squares and unweighted means.

His question:

- 1) Is this 'correct' or an error?
- 2) If weighted means option does not allow for confidence intervals....why not?

## Response

This is as designed: When you plot means over the levels of a repeated measures factor, then plotting error bars (computed from simple marginal means) would be misleading, because the means are not independent. That is the reason why the error term for repeated measures effects is more "complicated" than those for between group effects; in short, repeated measures effects (i.e., differences between means over levels of a repeated measures factor) are tested by constructing an appropriate set of within-subject transformations (known as the "M-transformation"; this is simply a way to compute difference scores).

However, even in that case, the error term (for the difference scores) is not necessarily appropriate, which is the reason for applying multivariate tests instead. (This is documented and discussed in our help.)

So, to summarize, the reason these error bars are not shown is because those error bars would be entirely unrelated to the test-of-differences between means, and hence potentially very misleading.

