

HOW TO DEAL WITH RESIDUAL FILES.

by

Ralph B. Taylor

[breck@rbtaylor.net](mailto:breck@rbtaylor.net)

All materials copyright (c) 1998-2002 by Ralph B. Taylor

This file talks about the kinds of things you want to investigate with the residuals. It is extremely important to check your residual files.

NOTE - WILL NEED TO RE-ATTACH A RESIDUAL OUTPUT AND SEE HOW IT LOOKS

HERE ARE THE STEPS TO FOLLOW IN CHECKING YOUR RESIDUALS

a. In the plot of CHIPCT\*MDIST do the actual (MDIST) and expected (CHIPCT) residual variances form a 45 degree line? If there are deviations from this line are they extremely sizable and dramatic, or pretty ho hum?

b. HLM assumes that the residual variances within the L-2 units are pretty normally distributed. The Stem and Leaf plot tells you about that. Does it look pretty normal? (Turn the plot on its side to see the histogram.) Are there any cases flagged as outliers? Does it lean too much to the left or right?

c. OLS intercepts and EB intercepts should agree monotonically with each other, forming a straight line. High and low scores on EB intercepts might be somewhat shrunken compared to the high and low scores on the OLS intercepts.

d. IF YOUR MODEL ALLOWS FOR VARYING SLOPES: look at same plot as above, but for slopes. You should see that EB slope estimates are dramatically shrunken as compared to the OLS slopes. See Figure 2.1 in manual p. 36.

e. In the plot of EBINTRCP\*FVINTRCP you should see equal VALUES on the residuals EBINTRCP at different ranges of the predicted value FVINTRCP.

f. In the plot of MDRSVAR\*FVINTRCP you should see equal VARIANCES of residuals MDRSVAR at different ranges of the predicted scores on the intercept. Only worry about pretty dramatic violations such as those where max/min is larger than about 3/1 or 5/1.

g. If you are allowing slopes to vary across L-2 units, you will see the correlation between slopes and intercepts in the usual output from the run itself. BUT YOU ALSO SHOULD LOOK AT THIS GRAPHICALLY. Do a plot of the slope \* the intercept, for both OLS and EB. See Figure 4.2 on p. 78 of B&R.

