

Handling of missing data in HLM

The HLM program consists of 5 modules. Depending on the module, missing data at level-1 are handled differently:

- HLM2 and HLM3 can handle missing data at level-1 of the hierarchy. Observations with missing data will be deleted using listwise deletion at either the MDM creation stage or when the analysis is run. The **Make MDM** dialog box for 2-level and 3-level models (HLM2 and HLM3) allows the chooser to two between these options. If deletion at the MDM creation stage is chosen, listwise deletion is performed based on the level-1 variables selected for inclusion in the MDM file. If deletion at the analysis stage is chosen, listwise deletion is performed based on the variables included in the actual model to be run.
- The multivariate models (HMLM and HMLM2) do not allow for missing data – here it is assumed that the data files are complete.
- In the case of cross-classified models, the presence of missing data should be indicated on the **Make MDM** dialog box. Listwise deletion will be performed during the MDM creation process.

Note that HLM assumes level-2 (and level-3) data files to be complete. If any of the higher level files contain missing data, units with missing data will automatically be deleted when the MDM file is created. Any level-2 or level-3 units with missing data should be removed or indicated as such in the data file prior to analysis, or use should be made of data imputation, as the program will either delete these observations or, in the case of ASCII input data, treat missing data codes as valid data values. A message concerning the presence/removal of missing data will also be printed to the *.sts file, which may be accessed using the **Check Stats** button in the **Make MDM** dialog box.

Note that, if blanks or missing data codes are present in the data files, these codes will be treated as valid data if not removed or identified as missing data prior to analysis.