University of BRISTOL

eSTAT and interoperability

Project Meeting – 27/09/2010

Different software

- MLwiN => started
- WinBUGS => started
- R => started
- STATA => started
- SPSS => still to come
- SAS => still to come

MLwiN

- On a template-by-template basis (-)
- All current eSTAT templates can be run in MLwiN
- Both MCMC and “classical” estimation method
- MLwiN macros will be generated

WinBUGS

- Hopefully won't need to be template-specific
- Can be slow and eventually crashes (-)
- Can run multiple chains
- WinBUGS script and model files produced
- Back compatibility from WinBUGS models to eSTAT estimation engine

R

- MCMC and classical estimation methods
- Slower than MLwiN for MCMC
- Different packages could be used for MCMC with different sampling methods
- Different model families could possibly be implemented
- R scripts generated
- R can be used for data manipulation/ graphs functionality

R -continued

- MCMCglmm package used currently
  - Flexible
  - !! Default is additive overdispersion at level 1 included in Poisson and Binomial distribution

$$\text{obs}_{ij} \sim \text{Poisson}(\pi_{ij})$$

$$\log(\pi_{ij}) = \text{logexp}_{ij} + \beta_{0j}\text{cons} + \text{-0.048(0.006)uvbi}_{ij}$$

$$\beta_{0j} = \text{-0.170(0.025)} + u_{0j}$$

$$\begin{bmatrix} u_{0j} \end{bmatrix} \sim \text{N}(0,\ \Omega_u) \ :\ \Omega_u = \begin{bmatrix} \text{0.151(0.017)} \end{bmatrix}$$

Post –hoc correction

STATA

- MCMC not implemented
- Limitation to complexity of multilevel models that can implemented
- Can be implemented for specific model templates
- STATA DO files generated