Graduate School Workshop on Hierarchical Linear Models

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Aims
On completion, students should know how to:
a) identify problems for which hierarchical linear models are appropriate
b) interpret the results from Bayesian analysis in general and specifically from Markov Chain Monte Carlo (MCMC) Bayesian methods
c) apply Bayesian methods (JAGS software) to analyse such data
d) how Stan software can handle more complex problems

Organization
Students must have their own laptop (Windows, Mac or Linux are all fine), but do not need to pre-install any software as installation will be part of the workshop.

The workshop will be run using Zoom, so participants need to be able to run Zoom on that day in order to connect remotely, in order to benefit from the interactive teaching. The session will be recorded to benefit those unable to join us live.

Our focus will be on the dataset below, but we will spend some time dividing up the work and then discussing the different answers we get from different approaches.

Assumed knowledge
Students will be assumed to already understand linear models well. I will provide a downloadable textbook in advance for those who need revision. Knowledge of using R is beneficial.

References
JAGS manuals:
https://sourceforge.net/projects/mcmc-jags/files/Manuals/4.x/

JAGS examples:
https://sourceforge.net/projects/mcmc-jags/files/Examples/4.x/

JAGS software:
https://sourceforge.net/projects/mcmc-jags/files/JAGS/4.x/