

Fitting and understanding multilevel (hierarchical) models

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It is becoming easier to fit multilevel regression models, but it can still be a challenge to understand them. We present some tools for fitting multilevel models, displaying the fitted models, understanding variance components, and understanding regression coefficients and contrasts. Specific ideas discussed include redundant parameterizations, weakly-informative prior distributions, Anova plots, R-squared, partial pooling factors, and finite-population estimands. We demonstrate through examples the advantages of these model-understanding tools.