Multilevel Models, Equations, Syntax & English

true

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Table 1: Table continues below

model	equation
Intercept Only	$y = \beta_0 + e_{ij}$
Intercept Independent Variable(s)	$y = \beta_0 + \beta_1 x + e_{ij}$ $y = \beta_0 + \beta_1 x + \beta_2 z + e_{ij}$
Intercept Random variation of the intercept	$y = \beta_0 + e_{ij} + u_{0j}$
Unconditional intraclass correlation coefficient (ICC)	$\frac{var(u_{0j})}{var(u_{0j})+var(e_{ij})}$
Intercept Independent variable(s) Random variation of the intercept	$y = \beta_0 + \beta_1 x + e_{ij} + u_{0j}$ $y = \beta_0 + \beta_1 x + \beta_2 z + e_{ij} + u_{0j}$
Intercept Independent variable Random intercept Random slope	$y = \beta_0 + \beta_1 x + e_{ij} + u_{0j} + u_{1j} x$
We can estimate multilevel models with more than 1 random slope.	$y = \beta_0 + \beta_1 x + \beta_2 z + e_{ij} + u_{0j} + u_{1j} x + u_{2j} z$

Stata	English
mixed y	We estimated the mean of [outcome]
mixed y x mixed y x z	We estimated the relationship of [independent variable(s)] with [outcome]
mixed y || groupid:	We estimated the mean of [outcome]. We allowed the intercept of the model to vary by [groupid].
mixed y || groupid: estat icc	XX% of the variation in [outcome] was explained by clustering of participants in [groupid]
mixed y x || groupid: mixed y x z || groupid:	We estimated the relationship of [independent variable(s)] with [outcome]. We allowed the intercept of the model to vary by group.

Stata	English
mixed y x || groupid: x	We estimated the relationship of [independent variable] with [outcome]. We allowed the intercept of the model to vary by group. We also allowed the relationship of [independent variable] with [outcome] to vary by group.
mixed y x z || /// groupid: x z	

`///` is a line wrapping character to allow Stata commands to span multiple lines.

For binary outcomes, use command `melogit` instead.

`mixed` without a clustering variable will give very similar results to `regress`.