Stata for Cross Sectional Multilevel Models

```
library(dplyr)
```

```
Attaching package: 'dplyr'

The following objects are masked from 'package:stats':

    filter, lag

The following objects are masked from 'package:base':

    intersect, setdiff, setequal, union
```

```
library(pander)
```

```
model <- c("Intercept Only",
           "Intercept <br>Independent Variable(s)",
           "Intercept <br>Random variation of the intercept",
           "Unconditional intraclass correlation coefficient (ICC)",
           "Intercept <br>Independent variable(s) <br>Random variation of the intercept",
           "Intercept <br>Independent variable <br>Random intercept <br>Random slope",
           "We can estimate multilevel models with more than 1 random slope.")

equation <- c("$y = \\beta_0 + e_{ij}$",
              "$y = \\beta_0 + \\beta_1 x + e_{ij}$ <br>$y = \\beta_0 + \\beta_1 x + \\bet
              "$y = \\beta_0 + e_{ij} + u_{0j}$",
              "$\\frac{var(u_{0j})}{var(u_{0j}) + var(e_{ij})}$",
              "$y = \\beta_0 + \\beta_1x + e_{ij} + u_{0j}$ <br> $y = \\beta_0 + \\beta_1
              "$y = \\beta_0 + \\beta_1 x + e_{ij} + u_{0j} + u_{1j} x$",
              "$y = \\beta_0 + \\beta_1 x + \\beta_2 z +$ <br>$e_{ij} + u_{0j} + u_{1j} x

Stata <- c("mixed y",
           "`mixed y x` <br> mixed y x z",
           "`mixed y || groupid:`",
           "`mixed y || groupid:` <br>`estat icc`",
           "`mixed y x || groupid:` <br>`mixed y x z || groupid:`",
           "`mixed y x || groupid: x`",
```

```
           "`mixed y x z || ///` <br>`groupid: x z`")


English <- c("We estimated the mean of [outcome]",
             "We estimated the relationship of [independent variable(s)] with [outcome]",
             "We estimated the mean of [outcome]. We allowed the intercept of the model to
             "XX% of the variation in [outcome] was explained by clustering of participant
             "We estimated the relationship of [independent variable(s)] with [outcome].
             "We estimated the relationship of [independent variable] with [outcome].  We
             "")

crosssectionalMLM <- data.frame(model, equation, Stata, English)
```

```
# <br> to \n for LaTeX

crosssectionalMLM$model <- gsub("<br>",
                                "\n",
                                crosssectionalMLM$model)

# <br> to \n for LaTeX

crosssectionalMLM$equation <- gsub("<br>",
                                   "\n",
                                   crosssectionalMLM$equation)

crosssectionalMLM$equation <- gsub("\\\\\\\\",
                                   "\\\\",
                                   crosssectionalMLM$equation)

# <br> to \n for LaTeX

crosssectionalMLM$Stata <- gsub("<br>",
                                "\n",
                                crosssectionalMLM$Stata)

set.alignment('left')

pander(crosssectionalMLM, split.cells = 10)
```

model	equation	Stata	English
Intercept Only	$y = \beta_0 + e_{ij}$	mixed y	We estimated the mean of [outcome]
Intercept Independent Variable(s)	$y = \beta_0 + \beta_1 x + e_{ij}$ $y = \beta_0 + \beta_1 x + \beta_2 z + e_{ij}$	`mixed y x` mixed y x z	We estimated the relationship of [independent variable(s)] with [outcome]
Intercept Random variation of the intercept	$y = \beta_0 + e_{ij} + u_{0j}$	`mixed y || groupid:`	We estimated the mean of [outcome]. We allowed the intercept of the model to vary by [groupid].
Unconditional intraclass correlation coefficient (ICC)	$\frac{var(u_{0j})}{var(u_{0j})+var(e_{ij})}$	`mixed y || groupid:` `estat icc`	XX% of the variation in [outcome] was explained by clustering of participants in [groupid]
Intercept Independent variable(s) Random variation of the intercept	$y = \beta_0 + \beta_1 x + e_{ij} + u_{0j}$ $y = \beta_0 + \beta_1 x + \beta_2 z + e_{ij} + u_{0j}$	`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.

model	equation	Stata	English
Intercept Independent variable Random intercept Random slope	$y = \beta_0 + \beta_1 x + e_{ij} + u_{0j} + u_{1j} x$	`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.
We can estimate multilevel models with more than 1 random slope.	$y = \beta_0 + \beta_1 x + \beta_2 z + e_{ij} + u_{0j} + u_{1j} x + u_{2j} z$	`mixed y x z || /// groupid: x z`	