> SLA.nowtl3

Linear mixed model fit by REML

Formula: SLA ~ Inv + Trmt + Time + Fam + Inv:Trmt + Inv:Time + Trmt:Time + Trmt:Fam + Time:Fam + (1 | Sp) + (0 + Trmt | Sp)

Data: SLAl

AIC BIC logLik deviance REMLdev

826.3 910 -392.2 760 784.3

Random effects:

Groups Name Variance Std.Dev. Corr

Sp (Intercept) 0.083707 0.28932

Sp Trmtshade 0.262702 0.51254

Trmtsun 0.071181 0.26680 -0.022

Residual 0.338138 0.58150

Number of obs: 397, groups: Sp, 21

Random variation in slope of SLA ~ Trmt by Sp

Random intercept for Sp

> SLA.nowtl4

Linear mixed model fit by REML

Formula: SLA ~ Inv + Trmt + Time + Fam + Inv:Trmt + Inv:Time + Trmt:Time + Trmt:Fam + Time:Fam + (Trmt | Sp)

Data: SLAl

AIC BIC logLik deviance REMLdev

824.3 904 -392.2 760 784.3

Random effects:

Groups Name Variance Std.Dev. Corr

Sp (Intercept) 0.34641 0.58857

Trmtsun 0.34001 0.58310 -0.774

Residual 0.33814 0.58150

Number of obs: 397, groups: Sp, 21

Random variation in slope of SLA ~ Trmt by Sp

Random intercept for SLA ~ Trmt by Sp, correlated w/ variation in slope

> SLA.nowtl5

Linear mixed model fit by REML

Formula: SLA ~ Inv + Trmt + Time + Fam + Inv:Trmt + Inv:Time + Trmt:Time + Trmt:Fam + Time:Fam + (0 + Trmt | Sp)

Data: SLAl

AIC BIC logLik deviance REMLdev

824.3 904 -392.2 760 784.3

Random effects:

Groups Name Variance Std.Dev. Corr

Sp Trmtshade 0.34643 0.58858

Trmtsun 0.15489 0.39356 0.348

Residual 0.33814 0.58150

Number of obs: 397, groups: Sp, 21

Random variation in slope of SLA ~ Trmt by Sp

No intercept for Sp

> SLA.nowtl2

Linear mixed model fit by REML

Formula: SLA ~ Inv + Trmt + Time + Fam + Inv:Trmt + Inv:Time + Trmt:Time + Trmt:Fam + Time:Fam + (1 | Trmt:Sp) + (0 + Trmt | Sp)

Data: SLAl

AIC BIC logLik deviance REMLdev

826.3 910 -392.2 760 784.3

Random effects:

Groups Name Variance Std.Dev. Corr

Trmt:Sp (Intercept) 0.098484 0.31382

Sp Trmtshade 0.247932 0.49793

Trmtsun 0.056405 0.23750 0.682

Residual 0.338137 0.58150

Number of obs: 397, groups: Trmt:Sp, 42; Sp, 21

Random variation in slope of SLA ~ Trmt by Sp

Random variation in intercept among Sp w/in Trmt

Trmt:Sp + Sp Trmtshade (l2) == Sp (intercept) (l4)

To create models in lme:

R2S.final <- lme(R2S ~ Inv + Trmt + Hv + Time + Inv:Time + Trmt:Hv,

random = list(~1|Sp, ~1|Sp:Trmt),

data=ldatR2S, weights = varIdent(form = ~1|Sp))

Random Terms and Categorical Factors

Hello,

I have a conceptual question and I’ve had a hard time finding the answer on my own.

If I have a response variable (R), a categorical fixed factor (A) and a random factor (B), what is the difference between the following three models (all in lmer)?

1. R ~ A + (A|B)
2. R ~ A + (0+A|B)
3. R ~ A + (1|B) + (0+A|B)

I understand that with a continuous variable, model 1 calculates a correlation between random variation in the intercept by B and the random variation in the slope of R ~ A by B. But for a categorical factor, the output gives identical variances for B (intercept) from model 1 and B (level 1 of A) from model 2. What confuses me is that the variances for B (level 2) are different between model 1 and 2, but everything else is identical between the two models (AIC, fixed effect estimates, etc).