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Introduction to lme4

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install.packages ("lme4")

install.packages ("lmerTest")

install.packages ("arm")

library(lme4)

library (lmerTest)

library (arm)

########################FIRST PART

#Exercise 1: Run the data that’s provided and then use head(lmm.data) and str(lmm.data) to take a look at the data

lmm.data<-read.table("http://bayes.acs.unt.edu:8083/BayesContent/class/Jon/R\_SC/Module9/lmm.data.txt", header=TRUE, sep=",", na.strings="NA", dec=".", strip.white=TRUE)

#Exercise 2: Analyze the variable and fixed effects from our example

lm <-

#Exercise 3: Fit the random variable ‘school’

lmer <-

########################SECOND PART

#Exercise 4: In the dataset lmm.data, check if class is nested in school

#Exercise 5: add the random variable class as a nested effect in school

lmer <-

#Look at the results; does it makes a difference compared to the previous one (with only school as random effect)?

summary (lmer)

plot(lmer)

#Exercise 6: Look at the variance explained by the school factor. What happen if you treat it as a fixed effect? Try out

lm2 <-

summary (lm2)

Exercise 7: try to fit to our dataset a random slope model, with openness’ slope varying by school

Randomslope\_lme <-

########################THIRD PART

#Exercises to compare and evaluate our mixed models

#Check the arguments of lmer command and find the REML argument

?lmer

# Run the following model

#Model\_1

lmer <- lmer(extro ~ open + agree + social +(1|school/class), data= lmm.data, REML = T)

summary(lmer)

# Run the following model

#Model\_1

lmer <- lmer(extro ~ open + agree + social + (1|school/class),
 data= lmm.data, REML = F)

summary(lmer)

#Run the following model

#Model\_2

lmer2 <- lmer(extro ~ social + (1|class) + (1|school), data=lmm.data, REML = F)

summary(lmer2)

# Test statistically the two models

anova(lmer, lmer2)

# Fit the following models, a full model and a reduced model in which we dropped our fixed effects

Full.lmer <- lmer(extro ~ open + agree + social + (1|school/class),
 data= lmm.data, REML = F)

Reduced.lmer <- lmer(extro ~ 1 + (1|school/class), data=lmm.data, REML=F)

# Compare them

anova(Reduced.lmer, Full.lmer)

# After choosing the appropriate model

#Model\_1

lmer <- lmer(extro ~ open + agree + social + (1|school/class),
 data= lmm.data, REML = T)

summary(lmer)