

# OVERVIEW OF SMLP2020 - STREAM 4

BEFORE TODAY: Julia 1.5.1  
VS Code  
RStudio  
Rmd  
R  
Dr Watson Repo!

## MACROS

- ① Workflow (Installation, VS Code, jmd, Jupyter NB)
  - ② Julia programming language (Julia PL) .jl  
(not "everything", but what's necessary for Mixed Models)
  - ③ Presentations → ④ Scripts and data  
< Order is not final; we may not cover everything
- + Overview 1 (DB) { sleepstudy - longitudinal  
P<sub>1</sub>'s scripts + data
  - + Overview 2 (RK) { dgestuff - simple LMM (part 1)  
P<sub>2</sub>'s scripts + data
  - + Mixed Models ↔ me4  
bridge [jellyMe4] (PA)
  - + Bootstrapping (DB) { dgestuff - simple LMM (part 2)  
paste - longitudinal
  - + GLMM (current limits in Mixed Models) (PA)
  - + Contrasts (RK) { 2 to be done, mrk17 - contrasts  
P<sub>3</sub>'s scripts + data
  - + Model selection (RK) { mrk17 - model selection  
New features (RK+PA) { P<sub>3</sub>'s scripts + data
  - + Principal Component Analysis (PCA) (PA) { mrk17 - pca  
P<sub>3</sub>'s scripts + data
  - + post-hoc LMM parameterization (RK) {
  - ↳ P<sub>1</sub>... P<sub>3</sub> Mixed Model estimates, (Example)

- lower parameters via simulation (DB + PA)
- + (| Transformations, covariates, interactions between factors and covariates (RK, PA)

## MONDAY SCHEDULE

9:00 - 10:20 } Workflow (Reinhold) Macro1  
10:40 - 12:00 }

< Practice

Phillip is around >

14:00 - 15:10 Workflow (Reinhold) or Julia PL (Phillip)

15:30 - 17:00 Overview of Mixed Models (Doug)

## TUESDAY SCHEDULE:

9:00 - 9:30 Workflow (Reinhold) using...

- sleepstudy - borrowingstrength - lme4. Rmd
- " " - lme4. jmd
- " " - MM. jmd

9:30 - 10:20 LMM specification / selection (Reinhold)

- mrk17 - specification - selection - jmd
- A. Lopukhina's submission

10:40 - 12:00 Practice model specification w/ own data

14:00 - 15:10 • What it actually means to fit a mixed model

- Singularity in mixed effects models (Phillip)

15:30 - 17:00 • Parametric bootstrap of MM estimates

- We may also include a short excursion (Doug) on package management in Julia (Phillip + Doug)

## Wednesday Schedule (tentative)

9:00 - 10:20 Contrasts (Reinhold)

10:40 - 12:00 Focus on participants'  
submissions

14:00 - 15:10 GLMM issues (Phillip  
Doug)

15:30 - 17:00 Focus on participants'  
submissions

## Thursday Schedule (tentative)

9:00 - 10:20 Focus on participants'  
submissions

10:40 - 12:00 PCA (Phillip)

14:00 - 15:00 Focus on participants'  
submissions

15:30 - 17:00 Power simulation  
(Doug + Phillip)