

Introduction to Linear Mixed-Effects Models

Resources

Data used in this workshop came from: Brown (2021)

Brown, V. A. (2021). An introduction to linear mixed-effects modeling in R. *Advances in Methods and Practices in Psychological Science*, 4(1), 2515245920960351.
<https://doi.org/10.1177/2515245920960351>

OSF directory with sample data and R code are available at: <https://osf.io/v6qag/>

Articles discussing linear mixed-effects models

Bates, D., Mächler, M., Bolker, B., & Walker, S. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software*, 67, 1-48. <https://doi.org/10.18637/jss.v067.i01>

Kuznetsova, A., Brockhoff, P. B., & Christensen, R. H. B. (2017). lmerTest Package: Tests in Linear Mixed Effects Models. *Journal of Statistical Software*, 82(13), 1–26. <https://doi.org/10.18637/jss.v082.i13>

Power and sample size calculations and effect sizes

Kumle, L., Võ, M. L. H., & Draschkow, D. (2021). Estimating power in (generalized) linear mixed models: An open introduction and tutorial in R. *Behavior Research Methods*, 53(6), 2528-2543. <https://doi.org/10.3758/s13428-021-01546-0>

Murayama, K., Usami, S., & Sakaki, M. (2022). Summary-statistics-based power analysis: A new and practical method to determine sample size for mixed-effects modeling. *Psychological Methods*, 27(6), 1014. <https://doi.org/10.1037/met0000330>

Brysbaert, M., & Stevens, M. (2018). Power analysis and effect size in mixed effects models: A tutorial. *Journal of Cognition*, 1(1), 9. doi: 10.5334/joc.10

R packages documentation

lme4: <https://cran.r-project.org/web/packages/lme4/lme4.pdf>

emmeans: <https://cran.r-project.org/web/packages/emmeans/emmeans.pdf>

lmerTest: <https://cran.r-project.org/web/packages/lmerTest/lmerTest.pdf>