HARUG 2023-05-24

# Preface:

Can you add some comments to the following R code please?

# Can we recreate an analysis?

## Step 1: setting the stage

I would like you to write some R code for me. I have an experiment with several variables.

The data are in a file called milk\_yield.xlsx

dataL - The data object

Cow - cow ID (a factor)

Allocation - different groups (a factor)

d\_post\_calv - days post-calving (count of days)

Treat - the experimental treatment (a factor)

parity - category of calving events (a factor)

prev\_yield - a covariate the amount of milk yield in previous days

Week\_0 to Week\_10 - different weeks measurements of average daily milk yield in litres

The data are in wide format I would like the data to be converted into long format with 1 column for week (as an ordered factor 0 to 10) and Yield as a numeric column

There is some missing data for a few cows.

I want to run a linear mixed effects model using the R packages lme4 and lmerTest with Cow as the random variable

Yield is the dependent var.

The explanatory variables are the treatment, the parity and the week.

Write a script that analyses the data and makes univariate graphs for the explanatory variables. I am interested in p-values for the main effects in an ANOVA table (i.e., not a contrasts table from the summary() function) of the explanatory variables and also in the amount of variation explained by the random effects.

## <BONUS>

Here is the anova table of results. Can you report the results like you would see in a statistical journal? Type III Analysis of Variance Table with Satterthwaite's method

 Sum Sq Mean Sq NumDF DenDF F value Pr(>F)

Treat 13.7 6.85 2 41.16 0.7818 0.46426

Week 7252.3 725.23 10 425.49 82.7330 < 2e-16 \*\*\*

parity 63.5 63.47 1 41.25 7.2406 0.01025 \*

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