

Assignment 2

Advanced Data Skills, Open Science and Reproducibility M.Res. unit BIOL63101

Remember that you need to produce your assignment using R Markdown and submit the knitted `.html` file. I want to see your code, your output and appropriate narrative describing (and justifying) your decisions.

Q1 The data in the file `assignment_2_dataset_1.csv` are from an experiment with 96 participants. We measured how quickly people could pronounce a word that was presented to them. Words were presented either normally (Condition A) or were visually degraded (Condition B). This was a between participants factor of visual quality with 2 levels. Conduct an ANOVA to determine and interpret the effect of visual quality on response time.

Q2 The data in the file `assignment_2_dataset_2.csv` are the same as in `assignment_2_dataset1.csv` except now we have a measure of caffeine consumption (in cups of coffee) for each individual. (a) Conduct the appropriate ANOVA to determine and interpret the effect of visual quality on response time when taking account of caffeine consumption. (b) Use the `lm()` function to build the equivalent linear model and interpret the output (comparing it to the ANOVA output).

Q3 The data in the file `assignment_2_dataset_3.csv` are from a 2 x 2 repeated measures design. 148 participants responded to a target image that was either positive or negative in valence. The target was preceded by a prime that was either also positive or negative in valence. We want to determine whether people responded faster to positive images following a positive prime (relative to following a negative prime), and faster to negative images following a negative prime (relative to following a positive prime). Perform the appropriate repeated measures ANOVA on the data to determine whether this is the case.

Merit-level marks can be achieved by writing code following the Tidyverse style guide, adding narrative explaining the packages and functions that you are using, and building visualisations using the geoms we covered in class.

Marks at distinction level can be achieved by doing the above *plus* using packages and/or functions that we have not covered in class.