

In-class exercise: Single factor ANOVA with three levels - equal variance

Names: (signatures only please, printed names will not be counted)

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| 1.) | 4.) |
| 2.) | 5.) |
| 3.) | 6.) |

Instructions

In this exercise we suppose we have measurements at three levels of a factor.

The data is in a file called `MTH225-6_IC1_data.csv`.

Variable names are `lv1,y1,y2,y3,y4,y5`

You should be able to use the STAN model file from the 3-level example, `ANOVA_example_1way_3levels.stan` without making any changes.

For the `.Rnw` file, you can use `MTH225-6_IC1.Rnw`. You will need to add code to:

- use the `read.csv()` function to read the data file.
- create local variables `lv1` and `y` to match the `.stan` file.
- create a variable `N` containing the number of elements in `y`. You can use the `length()` function for this.
- create a variable `L` containing the number of levels. You can hard code this if you like.

Questions

- 1) What are the point estimates of the means, `alpha[1]-alpha[3]`?
- 2) What are the point estimates of the differences, `d12`, `d13`, and `d23`?

3) What are the 95% confidence intervals for the three differences? Which of them include zero?

4) What is the point estimate of the probability that $\alpha[1]$ is greater than $\alpha[2]$? $\alpha[1]$ is greater than $\alpha[3]$? $\alpha[2]$ is greater than $\alpha[3]$?