Exercise 2. Data analysis

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Overview

In this exercise you will analyze emission of methane from pig slurry samples incubated in a laboratory experiment. Multiple bottles were used as reactors in a completely crossed factorial experiment with 2 temperatures and 2 headspace gases. Measurement data were kindly provided by Frederik Dalby.

1. Read and check data

Read in the data in the file `slurry_emis.csv`. Check the data. The relevant columns are

- `reactor`: bottle key
- `ch4`: methane concentration in bottle exhaust in ppmv
- `flow`: rate of gas flow through the bottle in L/min
- `day`: time of measurement from setup in d
- `gas`: headspace gas
- `temp`: incubation temperature

2. Data analysis

Use an appropriate approach to determine if the data show that incubation temperature and headspace gas affect methane emission. Quantify any effect.

My suggestion

I recommend using response feature analysis with calculated total emission as the response variable, fitting a linear model using `lm()` in R or `ols()` in Python. But you could use other responses.