

STATISTICAL RETHINKING 2026

HOMEWORK A1

What is homework? Your completed answers to the prompts below should contain all the code necessary to repeat your calculations.

When is homework due? Homework is due each week on the day of the relevant lecture (Tuesday for A/Beginner or Friday for B/Experienced). You are welcome to work in groups. Just please turn in your individual answers. If ever you are late with homework, it's okay. Life is complicated. Turn it in when you finish it. The learning comes from doing it. I want you to do it. But keeping to deadlines is also good for your pace of learning, which is why I suggest keeping up.

Where is homework due? Upload your homework at the link provided to registered students. Please name the file with your name and the course week. The preferred file format is PDF or a plain text file (.Rmd or .R or .py or .jl). Please do not turn in a Microsoft Word document.

For your own good, it would be helpful to review the problems at the end of Chapters 1 and 2 (2nd edition). The answers are in the solutions guide.

A1. To study honesty, behavioral scientists have used an experiment called the *Random Allocation Game* (RAG). In a RAG, participants are given a single coin. Participants flip the coin, and if the result is heads, they win a small cash prize (like 10 Euros). Participants flip the coin in private—the experimenter cannot see or verify the result, and participants know this.

While it is impossible to know if any individual participant honestly obeys the result of the coin flip, in the aggregate the proportion of prize claims provides information about the frequency of honesty in the sample. For example, if everyone claims the prize, then probably a lot of them are liars.

Suppose 10 participants play a RAG and 8 of them claim the prize. Using the “garden of forking data” approach, how many ways are there to realize this sample (8 out of 10), if all participants are honest? How many ways, if 5 of the participants are honest? Can you figure out the number of honest participants that maximizes the number of ways to realize the observed sample (8 out of 10)?