

How to use the simulation framework

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This tutorial explains how to use the simulation framework.

Loading the data and the scripts.

We load the data that we want (i.e the binomial data that will serve to produce the simulation) and the scripts. The main function we care about is `simulate_outcome()`.

```
sample_data <- read.csv(here("data", "sample_ga_data_binomial.csv"))
source(here("R", "sim_variables.R"))
```

Running a first simulation

We simulate $n = 1000$ observations.

```
sim1 <- simulate_outcome(sample_data = sample_data, n = 1000)
names(sim1)
```

```
## [1] "y"          "covariates"
```

The simulation returns the simulated outcome y as well as the *covariates* matrix used to do the simulation.

Changing the complexity

We introduce a complexity argument that can be between 0 and 20. With *complexity* = 0, we simulate the log-odd of y as a linear combination of the covariate. Increasing the complexity by one adds one non-linear term (for example cubic or square root) and two interaction terms.

```
sim2 <- simulate_outcome(sample_data = sample_data, n = 1000, complexity = 10)
```

Reproducibility

The function also has a seed argument. It has a default value so that we can all have the same results, but you can change it if you want to iterate over multiple results.