

Bernoulli and linear regression models

With more notes on building Stan models

Welcome to the fifth workshop of the BayesCog course!

Having introduced basics of Stan with our binomial model in the previous workshop, we will now implement two new types of models: **the Bernoulli model and linear regression**. We will understand how the Bernoulli is linked to the binomial model, describing the same underlying process (binary outcomes) but at an individual trial level. Meanwhile, linear regression will introduce us to models with multiple parameters and continuous outcomes. In doing so, we will also **build our knowledge of the Stan language further**, including variable declaration, control flow and variable scope.

The goals of this workshop are to:

- Learn how to implement a Bernoulli model in Stan for modeling binary outcome data
- Re-think linear regression as a Bayesian model, implementing it in Stan
- Gain a deeper understanding of Stan's programming features, including vectorization and efficient coding practices
- Run model validation using posterior predictive checks and diagnostic tools

Working directory for this workshop

Model code and R scripts for this workshop are located in the `(/workshops/03.bernoulli_coin)` and `(/workshops/04.regression_height)` directories. Set your working directory to `(/workshops/03.bernoulli_coin)` to begin with. Remember to use the `R.proj` file within each folder to avoid manually setting directories!

The copy of this workshop notes can be found on the course GitHub page.