Arjun Krishnan

Day04 Assignment

Due before class Mon, Nov 23

> Download and work with R or Jupyter notebook and submit your completed notebook via Slack.

The R or Jupyter notebook – whichever one you choose – contains all the details in the `Assignments` directory in the class website: https://github.com/krishnanlab/teaching/tree/master/2020-fall_statgaps/Assignments

- `Day-04_Assignment.Rmd`
- `Day-04_Assignment.ipnb`

When you submit, make sure your notebook's filename is:

- `[FirstName]-[LastName]_Day-04_Assignment.Rmd`
- `[FirstName]-[LastName]_Day-04_Assignment.ipynb`

Overview of the assignment

Please submit your assignment as a RMarkdown or a Jupyter notebook. Include your code and results/plots for the programming exercises. Finally, answer all the questions that are provided throughout the notebook.

Part 1 – Calculating power and generating a power curve for detecting unfair coins

This part deals with implementing an experiment to identify if a coin is biased or not, and additionally calculating the power of this experimental design for a specific set of parameters such as sample size and effect size.

1. Flip the given coin `num_flips` times
2. Record the number of heads
3. Compare to the null distribution
4. Get a `p_value`
5. Reject or accept the null based on comparison to `alpha`

Part 2 – Generating a multiple power curves for detecting unfair coins

Here you will be generating multiple power curves to establish the relationship between power, effect size, and sample size. You will notice that much of the code above will be reused to generate the curve like the one above but for various sample sizes.