

# STAT157 HW 6

Feb 22, 2022

**Due Monday, February 28 at 11:59pm**

## Deliberate Practice: Common Probability Distributions

*Expected completion time: 50 minutes*

What distribution would you expect the following quantities to follow: normal, log-normal, power law, or other? Write down a few sentences of considerations that you took into account and your final answer.

1. The size of raindrops when it rains (in a fixed location).
2. The citation count of different research papers in a single research field (e.g. physics or computer science).
3. Standardized test scores (e.g. for the SAT or GRE) in the United States.
4. The amount of time (in minutes) spent playing a game of chess.
5. The estimated cost effectiveness (in dollars per life saved) of different global health charities/interventions.

Note: we will primarily grade you on the quality of your considerations (for example, we might not penalize you for saying log-normal when the answer is power law, as long as you provide a plausible justification for it being log-normal instead).

## Lab

*Expected completion time: 60 minutes*

[Link to Jupyter notebook.](#)

Please follow the instructions in the notebook to print out your code and answers and submit to Gradescope. You may use languages other than Python, although we will generally be providing starter code in Python.

On Gradescope, please also submit the time it took to complete this exercise.

## Predictions

*Expected completion time: 120 minutes*

Register the following predictions. You can submit them by going to <https://forms.gle/q9RccKemxaRtrZ6o6> and following the form's instructions. For these predictions, (and all predictions about the future throughout this class), we encourage you to use external sources – by googling things, reading news articles, talking to friends who follow politics or music stats, etc.

1. What will the Euro to USD exchange rate be on March 1 at 11:59pm, according to [Yahoo Finance](#)?
2. Give an 80% confidence interval for two-thirds of the average of the upper bounds of the confidence intervals students forecasters will submit for this question.
3. What will be the maximum number of upvotes for a post submitted to the r/berkeley subreddit between March 1 11:59pm and March 7 11:59pm?
4. What will be the video game of the year 2022 according to SXSW? Give a probability for each of the [5 nominees](#).

For each question, submit a mean and inclusive 80% confidence interval, as well as an explanation of your reasoning (1-2 paragraphs). **Please include a copy of your google form responses with your Gradescope submission.** On Gradescope, please also submit the time it took to complete this exercise.