STAT157 HW 6

Feb 22, 2022

Due Monday, March 1 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: 90 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. What will be the video game of the year 2022 according to SXSW? Give a probability for each of the 5 nominees.
3. 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.

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.