STAT157 HW 2

Jan 24, 2022

Due Monday, January 31 at 11:59pm

Deliberate Practice: Calibration

Expected completion time: 30 minutes

Go to https://www.openphilanthropy.org/calibration and complete 30 questions under the Confidence Intervals (level 60%) category.

At the end, go to the "Results" tab and take screenshots showing that you completed at least 30 questions and your calibration performance (the chart that appears below the results).

Deliberate Practice: Estimation

Expected completion time: 70 minutes

For each of the following questions, estimate the answer without looking things up, then look up the answer and calculate the relative error of your estimate[1]. For each quantity, we provided one link with a reasonable-seeming answer, which you should use as the "official" answer when you calculate the error. Try to spend at least 2-3 minutes on each estimation! You will be graded on your thinking process, not your accuracy.

1. How many cattle are in the world in 2021?

2. What's the length of the SF Bay Bridge, in meters?

3. How heavy, in tons, is the Titanic?

4. How many paid subscribers of Netflix are there as of Q3 of 2021?

5. How many statistics and biostatistics degrees (Bachelors plus Masters plus PhD) were given in the U.S. in 2020?

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[1]Note that some of these questions still leave some ambiguity depending on specific definitions, and different Google search results might give slightly different answers!

6. What was the GDP of Mexico in 2020?

7. How many musicians are employed in the U.S.?

8. What's the depth of the deepest hole, in meters, that humans have dug?

Here are our links that contain answers:

1. https://www.statista.com/statistics/263979/global-cattle-population-since-1990/

2. https://en.wikipedia.org/wiki/San_Francisco%E2%80%93Oakland_Bay_Bridge

3. https://en.wikipedia.org/wiki/Titanic

4. https://www.insiderintelligence.com/insights/netflix-subscribers/

5. https://magazine.amstat.org/blog/2021/10/01/undergrad-stats-degrees-up/

6. https://countryeconomy.com/gdp/mexico

7. https://www.zippia.com/musician-jobs/demographics/

8. https://en.wikipedia.org/wiki/Kola_Superdeep_Borehole

Also, devise two estimation questions of your own, for quantities you are interested in. Again, estimate the answer without looking things up, then look up a reasonable answer and compute your relative error.

On Gradescope, for each of the **10 questions (8 provided plus 2 created by you)**, submit your estimate, an explanation of your estimate, and your relative error.

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.

Predictions

Expected completion time: 35 minutes

Register the following predictions. You can submit them by going to https://forms.gle/o89xw3s2iEr252KK6 and following the form's instructions.

0. Pick the same website, application, or software you chose last week, and predict how much time you will spend on it between 12:00am Tuesday February 1st and 11:59pm Sunday February 6th., as measured by your time-tracking app.

1. How many percents of the vote will Figueres get in the first round of the Costa Rican presidential election on Feb 6?

2. Will Adele's *Easy on me* top the Billboard Hot 100 on the week of Feb 5?

3. Will Russia invade Ukraine between Feb 1 and Feb 7?

For each question, submit a mean and inclusive 80% confidence interval (or a probability for questions 2 and 3), as well as an explanation of your reasoning (1-2 paragraphs).