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10. Population versus samples

Population versus samples

[Start of transcript. Skip to the end.](#)



OK, so remember this little central dogma

for a billion statistics?

That you know the truth, you actually can generate what the observations look like.

And you want to go the other way around.

So let's try to understand the probability to statistics part

first, OK?



Video

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We denote the sample average, or sample mean, of n random variables X_1, \dots, X_n by

$$\bar{X}_n = \frac{1}{n} \sum_{i=1}^n X_i.$$

I.I.D. assumption

1/1 point (graded)

What happens with our assumption of the observations of the kiss orientation being i.i.d. Bernoulli if we assume that the preferred orientation changes with the time of day?

- ☐ The observations will always be dependent, so it is violated
- ☒ We will have to be more careful about how we collect observations
- ☐ No matter how we sample, we will still have i.i.d. observations



Solution:

The model will be more complicated, in particular, we cannot simply assume that all observations are $\text{Ber}(p)$ across different times of the day. However, when we draw our collection times randomly from the hours of the day, we could still assume that there is some p' that corresponds to the average of personal preferences throughout the day, and still work under the i.i.d. assumption.

Submit

You have used 2 of 3 attempts

i Answers are displayed within the problem

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- | | |
|---|---|
| <p>[Staff] <u>No of trials given to solve the Exercise problem.</u></p> <p>We are suppose to select one choice out of three and the number of trials given are also 3. The Probability (getting 0 marks) = 0. Is this done intentio...</p> | 2 |
| <p>I am glad lectures are not so scaring like the Homework 0...</p> <p>I hope not to speak too early.. but I am glad the lectures seem not to be so scaring like the Homework 0 was :-) :-)</p> | 4 |
| <p>Problem stated in video</p> <p>In the video the professor goes over the airport question and answer. Is the answer posted anywhere?</p> | 2 |
| <p>Can anyone help me understand what the professor means by when he talks about "The number that we saw in this nature example-- well, it's actually 0.6."?</p> <p>The histogram parts and subsequent explanations from him are not entirely clear to me. He says -> When my number is-- when my true number, m...</p> | 3 |
| <p>? Probabilty vs Statisics</p> <p>I am very interested in more problems like discussed in the video. Will that be covered in the class or should I look for a probability class to take?</p> | 3 |
| <p>?</p> | |

to clarify.

for iid to hold, the observations need to come from different hours (assuming the prob fluctuates hourly)? Otherwise they would not be independen...

3

☒ iid assumption

I am not clear why we cant assume iid Ber(p) in this case. There are two orientation one has probability p the other 1-p. I would assume no matter h...

3

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