

Pre-class preparation

Please read the following textbook sections from Degroot and Schervish's *Probability and Statistics* (fourth edition) or watch the video, as indicated:

- Textbook: 8.8 (through the end of Example 8.8.4 on pg. 518)

Objectives

By the end of the day's class, students should be able to do the following:

- State the definition of Fisher Information in a random variable, along with alternate expressions under specific assumptions.
- Understand and replicate parts of the proof of the alternate expressions of Fisher Information.
- Calculate the Fisher Information in a variety of sampling models.

Reflection Questions

Please submit your answers to the following questions to the corresponding Canvas assignment by 8:45AM:

1. The textbook states that the concept of Fisher Information cannot be applied to a $X \sim \text{Unif}[0, \theta]$ random variable. State in your own words why that is.
2. True or false? The Fisher Information in a random sample is a function/property of the data \mathbf{X} .
3. Use Examples 8.8.2 and 8.8.3 to explain in your own words why the Fisher Information can be viewed as “measuring the amount of information that a sample of data contains about an unknown parameter”.
4. (Optional) Is there anything from the pre-class preparation that you have questions about? What topics would you like some more clarification on?