

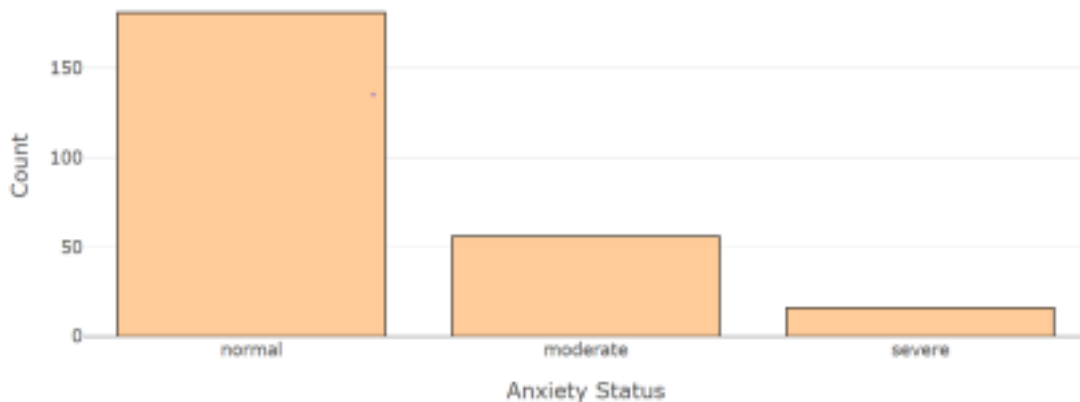
## Practice Assignment: Normal Distributions (Continued)

Questions 1–3: In past in-class activities (3.A and 4.A), you worked with data from a study that explored the connection between sleep and academic performance in college students.<sup>1</sup> Here is a reminder about the four variables you'll see today:

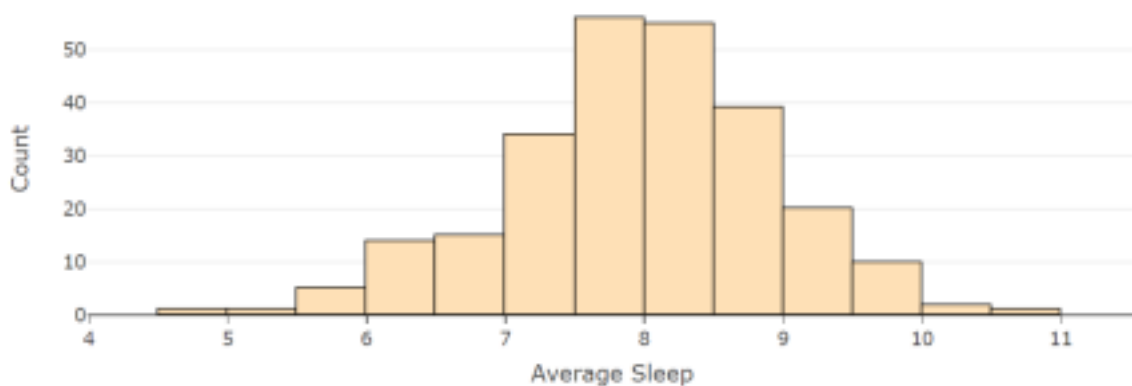
- *Anxiety Status:* Coded anxiety score—normal, moderate, or severe •
- *Average Sleep:* Average hours of sleep for all days of the week •
- *Drinks:* Number of alcoholic drinks per week
- *Weekday Sleep:* Average hours of sleep for weekdays

1) The following are four graphs representing each variable. Which variable is best fit by the normal distribution?

a)

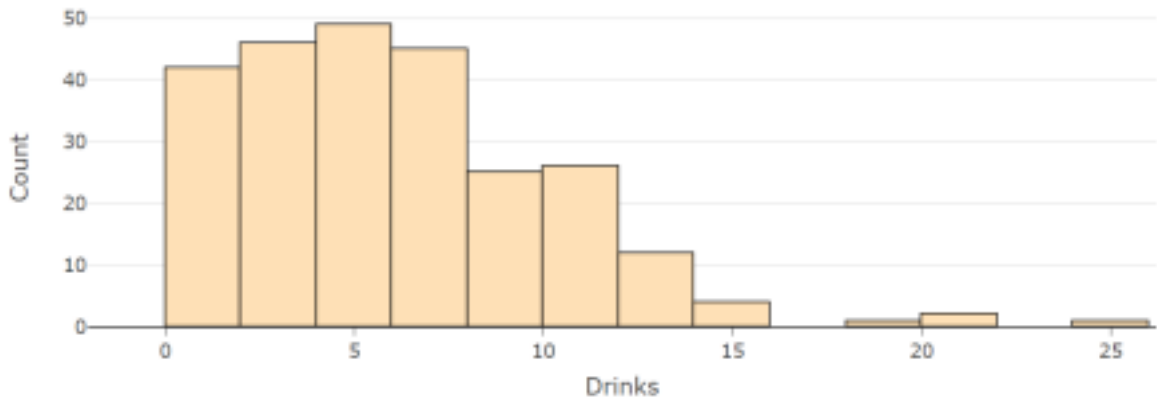


b)

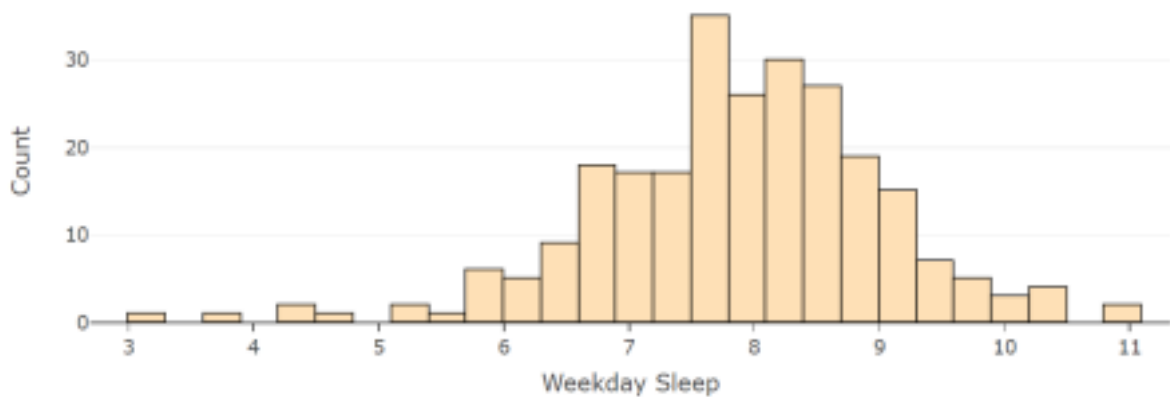


<sup>1</sup> Onyper, S. V., Thacher, P. V., Gilbert, J. W., & Gradess, S. G. (2012). Class start times, sleep, and academic performance in college: A path analysis. *Chronobiology International*, 29(3), 318-335.

c)



d)



2) Justify your answer to Question 1. Explain both why you chose the variable you did and why you did not choose the other variables.

3) The mean for *Average Sleep* is 7.97, and the standard deviation is 0.965.

Part A: The National Sleep Foundation recommends an average of 7–9 hours of sleep for young adults.<sup>2</sup> Estimate the percentage of college students who meet these guidelines. Round your answer to the nearest hundredth.

Part B: How does the recommendation compare to the *Average Sleep* data from the college student study?

<sup>2</sup> Suni, E. (2021, March 10). *How much sleep do we really need?* Sleep Foundation. <https://www.sleepfoundation.org/how-sleep-works/how-much-sleep-do-we-really-need>

Part C: Estimate the percentage of college students who get less than 6 hours of sleep on average. Round your answer to the nearest hundredth.

Part D: Estimate the percentage of college students who get more than 10 hours of sleep on average. Round your answer to the nearest hundredth.

Part E: A college student says, "I only get about 4 or 5 hours of sleep every night. Is this unusual?" Write a response of two or three sentences that includes a discussion of the Empirical Rule to support your answer.

Part F: A different student says, "I get more sleep than 90% of my peers." The student's fitness tracker shows that the student gets an average of 8.5 hours of sleep per night. Do you agree with the student's statement? Explain.

Part G: How many hours per night on average would the student need to sleep in order for the previous statement to be true? Round your answer to the nearest