Application exercise 3.1: Confidence interval for a single mean

Submit your responses on Sakai, under the appropriate assignment. Only one submission per team is required. One team will be randomly selected and their responses will be discussed.

The General Social Survey (GSS) is a sociological survey used to collect data on demographic characteristics and attitudes of residents of the United States. In 2010, the survey collected responses from 1,154 US residents. The survey is conducted face-to-face with an in-person interview of a randomly-selected sample of adults. One of the questions on the survey is "After an average work day, about how many hours do you have to relax or pursue activities that you enjoy?". The average time spent relaxing was 3.68 hours, with a standard deviation of 2.6 hours.

1. Is the distribution of number of hours spent relaxing after work for Americans nearly normal? How can you tell?
2. If your answer to the previous question is no, can we still use CLT based methods to estimate the true average number of hours spent relaxing after work for Americans using these data? Why, or why not?
3. Construct a 95% confidence interval for the true average number of hours spent relaxing after work for Americans.
4. Interpret this interval in context of the data.
5. What does "95% confident" mean in your interpretation?
6. Would you expect a 90% confidence interval to be wider or narrower than the 95% confidence interval you reported in the previous question?