

Homework 8

Due Wednesday, March 25

Moore: Ch 11 # 1,2,3,7,9,11,13,25,26,31,35,37,39,41
Ch 14 # 4,6,7,8abc,9,10,25,27,34,35,37

(Note we are not covering the optional material on Statistical Process Control in Ch. 11)

SPSS Project: Michelson's measurements of the speed of light.

From the web page, get the file `michelson_light_speed.sav`. This file contains two series of measurements of the speed of light made by Albert Michelson in 1879 and 1882. The measurements are given in amounts over 299000 km/s.

- a. Find a 95% confidence interval for the speed of light using the 1879 data.
- b. Find a 95% confidence interval for the speed of light using the 1882 data.
- c. Which set of data has a higher SD? Which set has a larger sample size? Which confidence interval is wider? Explain how these three questions are related.
- d. The modern accepted value for the speed of light is 299710.5km/s. Do the 95% confidence intervals from (a) and (b) contain the true value?
- e. Speculate as to why the 1879 data might give a confidence interval that does not contain the true value of the speed of light.