Monday 2
Statistics 8801
Feb 3, 2020

A client comes to you with the following problem. His medical device company purchases monofilament fibers from a supplier. These fibers need to be between .09 and .11 mm in diameter to be usable in the product. He has a sample of 40 fibers and has measured the diameters obtaining a mean of .102 and a standard deviation of .01. One of his employees took STAT 3011 and computes a 99% confidence interval for the mean as

$$.102 \pm 2.71 \frac{.01}{\sqrt{40}} = (.0977, .1063)$$

This employee concludes that with 99% probability, the fibers will be within our tolerances.

This is an important question, and the client has come to you to get a second opinion.

Your task as a team is to provide that second opinion via a brief (say about 5–8 minutes) presentation on the problem that you will be required to give on Monday, February 3. The team assignments are in Canvas (I hope). The team will jointly create the response presentation. The leader should upload your team's presentation materials before 9:00 am on Monday (email to me is not a bad idea either). On Monday, I will randomly select an individual from each team to give the presentation. You may use your own computer if you wish (or no computer if you wish), but you may also use mine.

Here are some possible questions for consideration in your discussion. Did the employee do the correct analysis? If so, was his conclusion correct? If not, what should have been done? Do the methods depend on any assumptions? Are these assumptions met? What questions would you ask about the sample of 40 fibers? Is a sample of size 40 big enough? What general class of methods is used to make inference about proportions of a distribution from a sample? How do you explain things to the client who has at best a very superficial understanding of statistics?