Confidence Intervals

7.2   Large-Sample Confidence Intervals for a Population Mean

A total of 201 student recruits from a 4-year public, East coast university participated in this study on "Student Internet Usage" with no mention made of friend networking sites. In order to obtain the rate of use of friend networking sites among all college students, no mention was made of friend networking sites on the participant sign-up sheets. Of the participants, 63 (31%) were men and 138 (69%) were women with a mean age of 19.4 years (SD = 4.7). In addition, of the participants, 91 (45.3%) were Caucasian, 60 (29.9%) were African American. 29 (14.4%) were Native American, 10 (5.0%) were Multi-racial/other, 5 (2.5%) were Asian, 3 (1.5%) were of Hispanic origin, and 3 (1.5%) were Hawaiian/Pacific Islander.

Answer the questions below based on the study's findings:

1. Of those who participated in the study, 175 of them reported having a Facebook account. The Facebook users reported spending an average of 125.2 minutes on the site per day. Assuming the standard deviation is 36.7 minutes, construct a 99% confidence interval to estimate the true mean amount of time spent on Facebook per day for all college students.

2. For the 175 Facebook users, the mean number of friends linked to their profiles was 318.39. The standard deviation was 436. Construct a 97% confidence interval for the true mean number of friends on Facebook for college students.

3. An outspoken professor on the campus where the study was conducted had been quoted in the school paper claiming students were "wasting" 2.5 hours (150 minutes) per day on Facebook. Based on your results from problem 1 above, does it appear the professor's claim is valid?

4. According to a site claiming to keep usage statistics on Facebook, the average Facebook user has 120 friends. Based on the results from problem 2 above, can we conclude that college students have more friends on Facebook than the average user?

Answers

1. (118.05, 132.35) We are 99% confident that the true mean amount of time spent on Facebook for college students is between 118.05 minutes and 132.35 minutes per day.

2. (246.87, 389.91) We are 97% confident that the true mean number of friends on Facebook for college students is between 246.87 and 389.91.

3. It does not appear that the average amount of time spent on Facebook is as high as the professor claimed since 150 minutes is well outside of the interval we created.

4. It does appear that the typical college student using Facebook has more friends on his profile than the average user in general. This is because the number 120 is not inside the interval formed in problem 2.