

MATHEMATICS 201-510-LW

Business Statistics

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XV – Estimating μ (small samples)

1. Find the following

a) $t_{(25,0.05)}$

b) $t_{(10,0.10)}$

c) $t_{(15,0.01)}$

d) $t_{(21,0.025)}$

e) $t_{(21,0.95)}$

f) $t_{(26,0.975)}$

g) $t_{(27,0.99)}$

h) $t_{(60,0.025)}$

2. A random sample of 15 statistics students showed that the mean time taken to solve an Excel assignment is 19 minutes with a standard deviation of 3 minutes. Construct a 99% confidence interval for the mean time taken by all statistics students to solve this Excel assignment. Assume that the time taken to solve this Excel assignment by all students follows a normal distribution.

3. Six artichoke plants at a farm were selected at random. Here is the number of artichokes produced by each plant last year.

32 17 51 40 36 34

Construct a 99% confidence interval for the mean number of artichokes produced by all artichoke plants. Assume that the number of artichokes produced by all artichoke plants follows a normal distribution.

4. The Dean of Registration at a College has implemented a new telephone registration system. The company that sold the system to the college claims that the mean length of phone calls is less than 10 minutes. To check this, the Dean randomly selected 20 calls, which had a mean length of 7.1 minutes and a standard deviation of 1.89 minutes. Assume that the length of phone calls is normally distributed.

a) Construct a 95% confidence interval for the mean length of phone calls.

b) Is the president's claim consistent with your interval? Explain.

5. Ten randomly selected shut-ins were each asked to list how many hours of television they watched per week. The results are

82 66 90 94 75 88 80 94 110 91

Determine the 90% confidence interval for the mean number of hours of television watched per week by shut-ins. Assume the number of hours is normally distributed.

6. The pulse rate for 13 adult women were

83 58 70 56 76 64 80

76 70 97 68 78 108

Find a 90% confidence interval for the mean pulse rate of adult women. Assume that the pulse rate for adult women is normally distributed.

ANSWERS

1. a) 1.708 b) 1.372 c) 2.602 d) 2.080
 e) -1.721 f) -2.056 g) -2.473 h) 2.000
2. 16.69 to 21.31 minutes
3. 16.73 to 53.27 artichokes per plant
4. a) 6.22 to 7.98 minutes
 b) Yes it is consistent, since all the values in the interval are less than 10.
5. 80.00 to 94.00 hours per week
6. 68.50 to 82.88