

Lecture 8
Statistical Inference II:
Interval Estimation:
Solution for exercises

MGMT/ECON 276

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Exercise 1

A simple random sample of 40 items resulted in a sample mean of 25. The population standard deviation is $\sigma = 5$.

a. What is the standard error of the sample mean?

A 0.790

b. Construct 95% confidence interval.

A The interval from 23.4516 to 26.5484.

Exercise 2

The National Quality Research Center at the University of Michigan provides a quarterly measure of consumer opinions about products and services. A survey of 10 restaurants in the Fast Food group showed a sample mean customer satisfaction index of 71. The population standard deviation is known as $\sigma = 5$.

- a. What assumption should the researcher make if he/she wants to construct a confidence interval?
 - A We need to assume that the population distribution is a normal distribution, since the sample size here is small.

- b. Construct 95% confidence interval.
 - A The interval from 67.90 to 74.09.

- c. Construct 90% confidence interval.
 - A The interval from 68.39 to 73.60.

Exercise 3

For a t -distribution with 16 degrees of freedom, find the area, or probability, in each region.

a. To the right of 2.120

A 0.025

b. To the left of 1.337

A 0.90

c. Between -2.120 and 2.120

A 0.95

d. Between -1.746 and 1.746

A 0.90

Exercise 4

The following sample data are from a normal population: 10, 8, 12, 15, 13, 11, 6, 5.

- ▶ What is the point estimate for the population mean?

A 10

- ▶ What is the point estimate for the population standard deviation?

A 3.46

- ▶ Construct 95% confidence interval.

A The interval from 7.106 to 12.89.

Exercise 5

The average cost per night of a hotel room in New York City is \$273. Assume this estimate is based on sample of 45 hotels and the sample standard deviation is \$64.

- ▶ Construct 95% confidence interval.
 - A The interval from 253.71 to 292.28.