Lab 6

Confidence Intervals for a Single mean

Overview of Lab Session:

In this lab session we analyze real-world medical data by finding confidence interval for the mean. Recall that having found a 95% confidence interval we conclude that on average about ninety five of the intervals so constructed contain the true population mean. We begin by using SPSS to calculate confidence intervals for medical data from the study we used in Lab 4:


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The data we work with in this lab is part of the ICU data used in the above study. The data is for 200 patients (represented by the rows of the data matrix). For each patient there are 21 measured characteristics (represented in the columns of the data matrix). These include ID, STA (Vital Status), AGE, SEX, RACE, SER (service at ICU admission), CAN (cancer), CRN (chronic renal failure), …, SYS (systolic blood pressure), HRA (heart rate), …

I. Get Started

Use your ID number and password to log onto the computer.
Launch SPSS by clicking on Start, All Programs, Classes, then SPSS.
Load the ICU data from www.csulb.edu/~saleem/Course-F08-503/Data/icu.sav
II. Find Confidence Intervals for the Mean

We use the sample of 200 ICU patients to estimate the mean for the population of such patients.

**STEP 1** Find a 95% confidence interval for the mean systolic pressure using the SYS data

From the top menu choose *Analyze > Compare Means* > *One-Sample t-Test*
From *Options* choose 95%
For *Test Value* choose 0
Record the results, including the standard deviation and the standard error of the mean.

**STEP 2** Find a 90% confidence interval for the mean systolic pressure using the SYS data

Repeat Step 1 to find the 90% confidence interval using the SYS data.

**STEP 3** Find the 90% and 99% confidence interval for the mean heart rate using the HRA data

Repeat Step 1 for the 90% and 99% confidence intervals using the HRA data.

III. Find Confidence Interval for the difference between two means

We use the sample of 200 ICU patients to estimate the mean for the population of such patients.

**STEP 1** Find a 95% confidence interval for the difference in the mean systolic pressure between men and women using the SYS data

From the top menu choose *Analyze > Compare Means* > *One-Sample t-Test*
From *Options* choose 95%
For *Test Value* choose 0
Record the results, including the standard deviation and the standard error of the mean.

**STEP 2** Find a 90% confidence interval for the mean systolic pressure using the SYS data

Repeat Step 1 to find the 90% confidence interval using the SYS data.

**STEP 3** Find the 90% and 99% confidence interval for the mean heart rate using the HRA data

Repeat Step 1 for the 90% and 99% confidence intervals using the HRA data.
Worksheet for Lab 6

1. For the SYS data.
   (a) The standard deviation is __________.
   (b) The standard error of the mean is __________.
   (c) The 95% confidence interval is (__________, __________)
   (d) The 90% confidence interval is (__________, __________)

2. For the SYS data
   (a) Explain the difference between the standard deviation in part (a) and the standard error of the mean in part (b).

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   (b) If the sample size is doubled, how would we expect the following quantities to change:
   (i) The standard deviation (ii) the standard error of the mean.

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3. For the SYS data
   (a) Which confidence interval is larger: the 90% confidence interval or the 95% confidence interval? Explain why the larger interval should be larger.

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