

MTH 145

SPSS Assignment #1 – Confidence Intervals for the Population Mean

The main goal of this assignment is to give you some experience on how to use SPSS to construct confidence intervals for the population mean or differences in population means. You should work in groups of 1-3(max) for this assignment, and you only need to submit one report for your group. Your report should be type-written and well organized. Note that we will be using the same data set as in the first SPSS assignment.

- I. Open the SPSS data file **health_exam_results.sav**. This data file can be found at http://www.uwlax.edu/faculty/baggett/Math_145/index.htm. Clicking on it should start the SPSS program automatically and your data will show up in an SPSS window. (If that doesn't work, save the file and open it from there.)

- II. The data are from the U.S. Department of Health and Human Services, National Center for Health Statistics, Third National Health and Nutrition Examination Survey. There are a total of 80 cases (40 males and 40 females) with each case having values for 14 variables. These variables are listed below.
 1. **Gender**
 2. **Age** (in years)
 3. **Height** (in inches)
 4. **Weight** (in pounds)
 5. **Waist** (circumference in cm.)
 6. **Pulse** (pulse rate in beats per minute)
 7. **SysBP** (systolic blood pressure in mmHg)
 8. **DiasBP** (diastolic blood pressure in mmHg)
 9. **Cholesterol** (in mg)
 10. **BodyMass** (body mass index)
 11. **Leg** (upper leg length in cm)
 12. **Elbow** (elbow breadth in cm)
 13. **Wrist** (wrist breadth in cm)
 14. **Arm** (arm circumference in cm)

Assume that these 80 individuals comprise a simple random sample taken from the United States. The goal here is to obtain meaningful information about the whole U.S. population based on this data set. You will be interested in two of the variables, **Cholesterol** and **Pulse**. For each variable you will construct 4 different confidence intervals: one using the entire 80 subjects, one using the 40 female subjects only, one using the 40 male subjects only, and one comparing the 40 males to the 40 females.

- III. To construct a 99% confidence interval for the population mean by considering all 80 subjects:
 1. Go to "**Analyze**" → "**Descriptive Statistics**" → "**Explore**".
 2. Put the variable (**Cholesterol** or **Pulse**) under "Dependent List."
 3. Click on the "**Statistics**" button. Here you can enter the desired 99% level of confidence (default is 95%) and click continue.
 4. Click "**ok**". You will be given the summary statistics for all 80 individuals (mean, median, mode, standard deviation etc.) as seen in the first SPSS assignment. Notice also that the upper and lower confidence bounds for the mean are given in the output.

- IV. To construct a 99% confidence interval for the population mean by considering just one gender:
 1. Go to "**Analyze**" → "**Descriptive Statistics**" → "**Explore**".

2. Put the variable (**Cholesterol** or **Pulse**) under “Dependent List.”
3. Put **Gender** under “Factor List.”
4. Click the “**Statistics**” button. Here you can enter the desired 99% level of confidence (default is 95%) and click continue.
5. Click “**ok**”. You will be given the same output as before, but now separated by gender.

V. To construct a 99% confidence interval for the difference in population means for the two genders:

1. Go to “**Analyze**” → “**Compare Means**” → “**Independent-Sample T-Test**”.
2. Put the variable (**Cholesterol** or **Pulse**) under “Test Variable(s).”
3. Put **Gender** in the “**Grouping Variable**” box.
4. Click “**Define Groups**” and type M for group 1 and F for group 2, then hit **continue**.
5. Click the “**Options**” button. Here you can enter the desired 99% level of confidence (default is 95%) and click continue.
6. Click “**ok**”. In the output you will be given the mean difference for the two groups along with its standard error. You will also be given confidence intervals for the difference in population means (dependent upon whether or not you assume equal population variances).

VI. Here are the things you should include in your final work to be handed in:

1. Copy and paste all relevant output into a Word document.
2. Complete the table at the bottom of the page for both variables (**Cholesterol** and **Pulse**).
3. Answer the following questions.
 - a. What are the implied populations when doing inference for each of μ , μ_F , and μ_M ?
 - b. By looking at only the CI’s for μ_F (female) and μ_M (male), does one gender appear to have a higher cholesterol? A higher pulse?
 - c. Interpret the meaning of the CI’s for $\mu_M - \mu_F$ in the context of cholesterol and pulse. Based on these CI’s does one gender appear to have a higher cholesterol? A higher pulse?

Parameter	Sample Mean	Sample Std. Dev.		99% C.I. Lower Bound	99% C.I. Upper Bound
μ (all)					
μ_F (female)					
μ_M (male)					
$\mu_M - \mu_F$		XXXXXXXX			

Email your Word document to jbaggett@uwlax.edu before you leave.
Put SPSS Assignment in the subject line.