Inference from Data: Principles

Topic 16

Confidence Intervals: Proportions

There are no activities that require SPSS Statistics in this topic. If you want to use technology, use the `Test of Significance Calculator` applet that is described in Topic 17.

Topic 17

Tests of Significance: Proportions

There are no activities that require SPSS Statistics in this topic. When asked to use technology, use the `Test of Significance Calculator` applet.

Topic 18

More Inference Considerations

There are no activities that require the use of SPSS Statistics in this topic. Use the `Test of Significance Calculator` to construct confidence intervals and conduct tests.

Topic 19
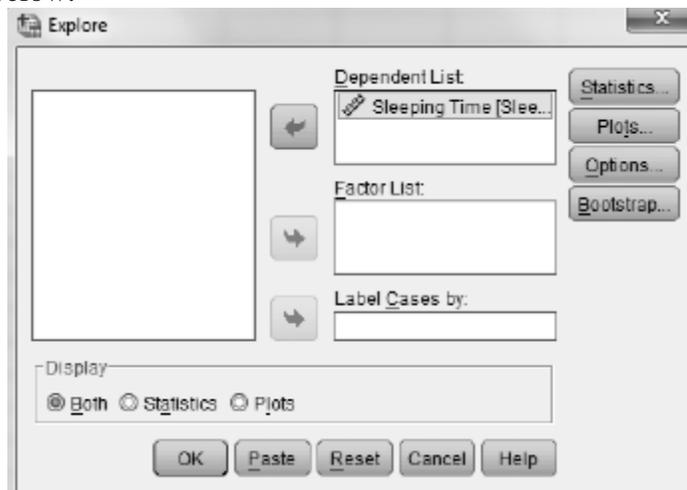
Confidence Intervals: Means

In-Class Activities

Activity 19-5: Sleeping Times
8-29, 19-4, **19-5**, 19-12, 19-19, 20-2, 20-7, Lab 5

a.   Use the Chart Builder to create the graphical displays that are requested.
b.   Use **Analyze > Descriptive Statistics > Explore** to calculate the mean, standard deviation, and sample size.
d.   The confidence interval may be constructed in SPSS two different ways.
   Method 1:
   1.   Select **Analyze > Descriptive Statistics > Explore** to open the dialog box shown below.

   2.   Move the sleeping time variable to the **Factor List** box.
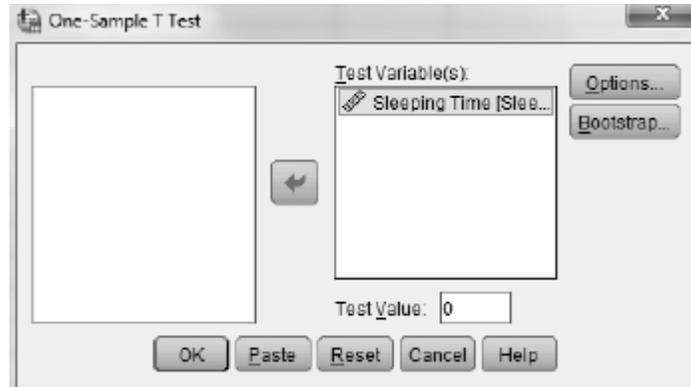   3.   Click **Statistics** to open the dialog box shown below.
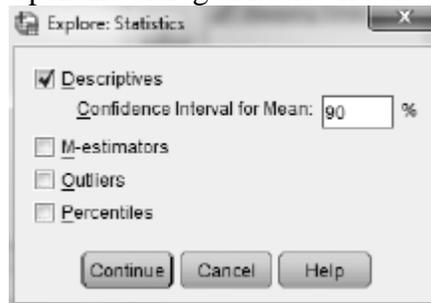
   4.   Place the desired confidence level (90), in percent, in the **Confidence Interval for Mean** box.
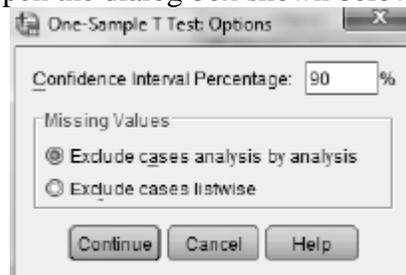
5. Click **Continue** followed by **OK**. The confidence interval will appear below the sample mean.

Method 2:

1. Select **Analyze > Compare Means > One-Sample T Test** to open the dialog box shown below.

2. Move the sleeping time variable to the **Test Variable(s)** box.
3. Click **Options** to open the dialog box shown below.

4. Place the desired confidence level (90), in percent, in the **Confidence Interval Percentage** box.
5. Click **Continue** followed by **OK**. The confidence interval will appear in an Output window.

e.   Complete this part as directed in your main textbook

Exercises

Exercise 19-7: Body Temperatures
12-1, 12-19, 14-3, 14-18, 15-9, **19-7**, 19-8, 20-11, 22-10, 23-3

Use SPSS to create the graph requested in part a. The data are stored in the SPSS file `BodyTemps.SAV`. Use SPSS to construct the confidence interval requested in part d. See Activity 19-5 for instructions.

Exercise 19-8: Body Temperatures
12-1, 12-19, 14-3, 14-18, 15-9, 19-7, **19-8**, 20-11, 22-10, 23-3

Use SPSS to construct the confidence interval requested in part a. The data are stored in the SPSS file `BodyTemps.SAV`. See Activity 19-5 for instructions.

Exercise 19-9: Social Acquaintances
9-8, 9-9, 10-13, 10-14, **19-9**, 19-10, 20-12

Enter the data you collected into SPSS and use SPSS to construct the confidence interval in part a.

Exercise 19-10: Social Acquaintances
9-8, 9-9, 10-13, 10-14, 19-9, **19-10**, 20-12

Use SPSS to construct the confidence interval requested in part a. The data are stored in the SPSS file `AcquaintancesCP.SAV`.

Exercise 19-14: Sentence Lengths

Enter the data into SPSS and use SPSS to create the graphical display requested in part a and the confidence intervals requested in part b and d.

Exercise 19-15: Coin Ages
12-16, 14-1, 14-2, **19-15**

Enter the sample data into SPSS and use SPSS to construct the confidence interval requested in part b.

Exercise 19-17: Close Friends
19-17, 19-18, 22-1, 22-5, 22-22

Use SPSS to construct the confidence interval requested in part c. The data are stored in the SPSS file `CloseFriends.SAV`.

Exercise 19-18: Close Friends
19-17, **19-18**, 22-1, 22-5, 22-22

Use the `Test of Significance Calculator` applet to construct the confidence interval requested in part a.

Exercise 19-21: Hypothetical ATM Withdrawals
9-4, **19-21**, 22-25

Use SPSS to compute the numerical summaries and construct the confidence intervals requested in part b. The data are stored in the SPSS file `HypoATM.SAV`.

Exercise 19-22: House Prices
19-22, 26-1, 27-5, 28-2, 28-12, 28-13, 29-3

Use SPSS to create the graphical displays requested in part a, and use SPSS to construct the confidence intervals requested in part c. The data are stored in the SPSS file `HousePricesAG.SAV`.

Exercise 19-28: Birth Weights
19-28, 19-29, 20-23m 20-24, 20-25, 29-24

Use SPSS to create the graphical displays and compute the numerical summaries requested in part a. Use SPSS to construct the confidence interval requested in part c. The data are stored in the SPSS file `NCBirths.SAV`.

Exercise 19-29: Birth Weights
19-28, **19-29**, 20-23m 20-24, 20-25, 29-24

Use SPSS to create the graphical displays and compute the numerical summaries requested in part a. Use SPSS to construct the confidence interval requested in part c. The data are stored in the SPSS file `NCBirths.SAV`.

Exercise 19-31: M&M Consumption
19-1, 19-3, **19-31**, 22-30, 22-31, 22-37

Use SPSS to construct the confidence interval requested in part b. The data are stored in the SPSS file `MMConsumption.SAV`.
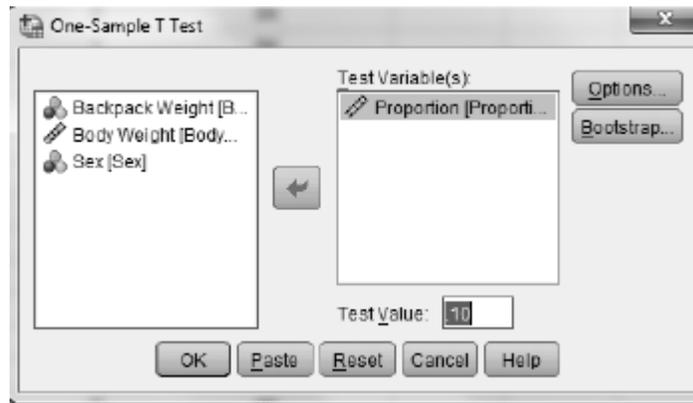
Topic 20

Tests of Significance: Means

In-Class Activities

Activity 20-1: Backpack Weights
2-3, 10-12, 19-6, **20-1**, 20-17, Lab 7

i.   Conduct this test using SPSS.
   1. Open the SPSS data file `Backpack.SAV`.
   2. Select **Analyze > Compare Means > One-Sample T Test**. To open the dialog box shown below.

   3. Move the variable *Proportion* to the **Test Variable(s)** box.
   4. Enter the value of μ_0, 0.10, in the **Test Value** box.
   5. Click **OK** and the test results will appear in an output window. The number in the *Sig. (2-tailed)* column is the two-sided *p*-value.
   6. SPSS performs inly the two-sided test. Use the reported *p*-value to obtain one-sided *p*-value as shown in the following table. *Sig.* is the two-sided *p*-value.

$H_a : \mu > \mu_0$	If $t > 0$: *p*-value = Sig./2
	If $t < 0$: *p*-value = 1 – Sig./2
$H_a : \mu < \mu_0$	If $t > 0$: *p*-value = 1 – Sig./2
	If $t < 0$: *p*-value = Sig./2

Activity 20-2: Sleeping Times
8-29, 19-4, 19-5, 19-12, 19-19, **20-2**, 20-7, LAB 5

a.   Enter the data into SPSS and use SPSS to conduct the test. See Activity 20-1 for instructions.

Use the `Test of Significance Calculator` applet to fill in the table on page 427 of your main textbook.

Activity 20-3: Golden Ratio

a. Enter the data into SPSS and use SPSS to construct a histogram of the data.
b. Use SPSS to conduct the test. See Activity 20-1 for instructions.

Exercises

Exercise 20-7: Sleeping Times
8-29, 19-4, 19-5, 19-12, 20-2, **20-7**, Lab 5

Use the `Test of Significance Calculator` applet to conduct the requested tests.

Exercise 20-9: Basketball Scoring
20-9, 20-20

Enter the data into SPSS and use SPSS to create the visual display requested in part c and to compute the mean and standard deviation requested in part d.

Exercise 20-11: Body Temperatures
12-1, 12-19, 14-3, 14-18, 19-7, 19-8, **20-11**, 22-10, 23-3

Use SPSS to create the requested visual and numerical summaries and to conduct the requested test. The data are stored in the SPSS data file `BodyTemps.SAV`.

Exercise 20-13: Age Guesses
8-20, **20-13**, 20-14

Enter the data into SPSS and use SPSS to create the graphical and numerical summaries that are requested and to conduct the requested test.

Exercise 20-17: Backpack Weights
2-13, 10-12, 19-6, 20-1, **20-17**, Lab 7

Use SPSS to conduct the test requested in part b. The data are stored in the SPSS file `Backpack.SAV`.