

## Confidence Intervals

### Description

In this lab you will be learning to use SPSS to construct confidence intervals for one quantitative variable. When answering a follow up question please use a font color other than black, red, yellow or white to help me differentiate between the question and your answer. When you have completed the lab use the Blackboard assignment submission link to submit your assignment in a Microsoft Word or PDF formatted document.

### Data

The data we will be using comes from the responses of the STA 215 Demographic Survey 2020. You will need to download and save the Excel file “STA 215 Demographic Survey 2020” from Blackboard.

### Lab Activities

**Variable View Set-up** - You will insert a screen shot of the Variable View set-up below to show completion of this task.

The screenshot shows the SPSS Variable View window. The 'Variable View' tab is selected at the bottom. A table lists variables with the following details:

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align
1	Timestamp	Date	40	0	Timestamp	None	None	11	Right
2	Gender	String	6	0	Gender	None	None	6	Left
3	What'syour...	Numeric	5	2	Age	None	None	12	Right
4	YearinSchool	String	81	0	Year in School	None	None	50	Left
5	Majororplan...	String	46	0	Major (or plann...	None	None	46	Left
6	Heightininch...	Numeric	5	2	Height (in inches)	None	None	12	Right
7	Weightinpo...	Numeric	5	1	Weight (in poun...	None	None	12	Right
8	ShoeSize	Numeric	4	1	Shoe Size	None	None	12	Right
9									
10									
11									
12									
13									
14									

**Descriptive Statistics** – You will generate the descriptive statistics along with the 95% confidence interval for the variable age. Insert the output below. (Analyze > Descriptive Statistics > Explore...)

The screenshot shows the SPSS Output window. It contains two tables: 'Case Processing Summary' and 'Descriptives'.

**Case Processing Summary**

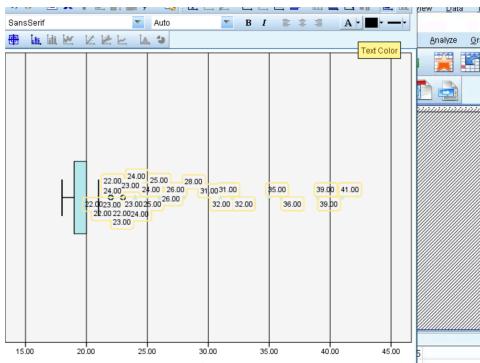
	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
Age	422	95.3%	21	4.7%	443	100.0%

**Descriptives**

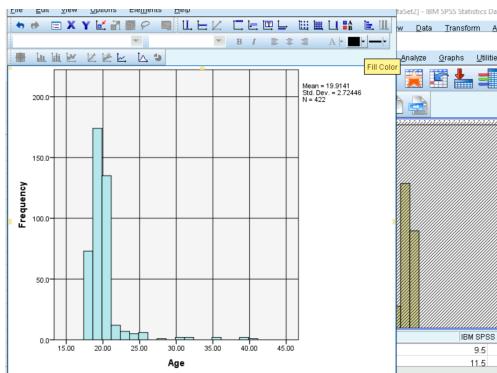
	Statistic	Std. Error	
Age	Mean	19.9141	.13262
	95 % Confidence Interval for Mean	Lower Bound	19.6534
		Upper Bound	20.1748
	5 % Trimmed Mean	19.4935	
	Median	19.0000	
	Variance	7.423	
	Std. Deviation		
	Minimum		
	Maximum		
	Range	23.00	
	Interquartile Range	1.00	
	Skewness	4.589	.119
	Kurtosis	26.244	.237

## Confidence Intervals

**Boxplot** – Create a boxplot for the variable age. You will need to change the orientation to horizontal, change the case numbers to the value of the outliers, and change the color of the boxplot. Insert the boxplot below. (Graphs >> Chart Builder)



**Histogram** – Create a histogram for the variable age. You will need to change the color to match the color of your boxplot and add gridlines to the histogram. Insert the completed histogram below. (Graphs >> Chart Builder)



1. What is the sample size for the variable age? [443](#)
2. Is the boxplot left skewed, right skewed, or symmetric? [Left skewed](#)
3. How many outliers are there for the variable age. [Approx. 28](#)
4. Is the histogram unimodal, bimodal, or multimodal? [Unimodal](#)
5. Interpret the confidence interval from the output for the variable age.  
[We are 95% certain that the true value falls between 19.6534 and 20.1748.](#)
6. Use SPSS to construct a 90% confidence interval for the variable height. Insert the output below.

## Confidence Intervals

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
Height (in inches)	439	99.1%	4	0.9%	443	100.0%

Descriptives			
Height (in inches)	Statistic	Std. Error	
Mean	67.1244	.20516	
99 % Confidence Interval for Mean	66.7862		
Lower Bound	67.4625		
Upper Bound	67.0678		
5% Trimmed Mean	67.0000		
Median	67.0000		
Variance	18.478		
Std. Deviation	4.29860		
Minimum	40.00		
Maximum	86.00		
Range	46.00		
Interquartile Range	.00		
Skearness	.016	.117	
Kurtosis	.033	.233	

7. Interpret the confidence interval for the variable height in question 6.

We are 90% sure the true mean height falls between 66.7862 and 67.4625 inches.

8. What is the mean for the variable height? [67.1244](#)

9. What is the median for the variable height? [67.00](#)

10. Is the distribution for the variable height left skewed, right skewed, or symmetric? [Either slightly right skewed or symmetric.](#)

11. When analyzing the variables age of students and height of students are there other variable we should consider in the analysis?

If the students have gone through puberty, if the students have a genetic predisposition towards being short or tall, preexisting conditions like dwarfism or obesity.