

# LDG 660 SPSS Assignment 1

The following data represent weights in pounds of 21 pro football players (the variable called WTFT), and 19 pro basketball players (the variable called WTBK). A convenience sample was conducted.

Reference: Sports Encyclopedia of Pro Football, and Official NBA Basketball Encyclopedia

There are 5 steps (each worth 15 pts). The lab, in total, is worth 75 pts.

**Step 1 (15 pts):** Import the data into SPSS. Insert an image/screenshot below to confirm this.

	WTFT	WTBK	var											
1	245	205												
2	262	200												
3	255	220												
4	251	210												
5	244	191												
6	276	215												
7	240	221												
8	265	216												
9	257	228												
10	252	207												
11	282	225												
12	256	208												
13	250	195												
14	264	191												
15	270	207												
16	275	196												
17	245	181												
18	275	193												
19	253	201												
20	265	201												
21	270	201												
22														

**Step 2 (15 pts):** Generate any graph you would like for the weights of pro football players. Insert an image/screenshot below to confirm this.

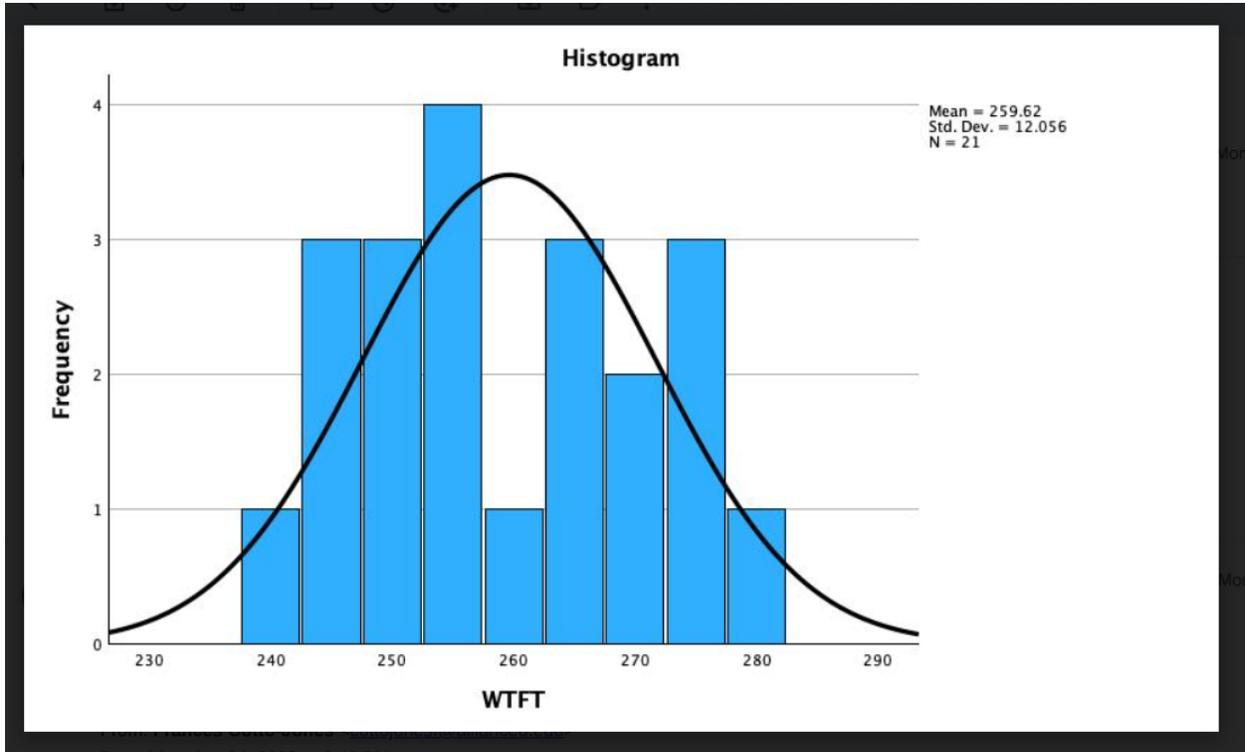
*Note: You could do this several ways:*

*Analyze Descriptive Statistics Frequencies – from here the Charts option will allow to output bar charts, pie charts, and histograms*

*Graphs Chart Builder*

Comment on what you see/what you can infer from the graph you generated.

Generally, this is not normal. The Mean is just under 260 lbs the standard deviation is just above 12 lbs.



**Step 3 (15 pts):** Compute descriptive statistics for the weight of pro basketball players.

Note: Be certain to include in the output: mean, std deviation, variance range, minimum, maximum, and range (i.e. make sure these are checked).

Insert an image/screenshot below to confirm this.

Descriptive Statistics	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
	WTBK	19	47	181	228	205.79	2.959	12.900
Valid N (listwise)	19							

$$12.9 \times 12.9 = 166.398$$

What is the average weight of the 19 randomly selected basketball players?

205.79 lbs

What is the meaning of the standard deviation?

*Hint: On average, each of the 19 data points varies ..... Now, fill in the rest....*

On average each of the 19 basketball players varies from the mean of 205.79 by about 12.9lbs

**Step 4 (15 pts):** Test (at the 5% level of significance) the hypothesis that the true population mean weight of football players is equal to 250 lbs. Therefore, test the following:

Null:  $\mu = 250\text{lbs}$

Alternative:  $\mu \neq 250\text{lbs}$

Insert an image/screenshot below to confirm this.

One-Sample Test	Test Value = 0		Significance		Mean Difference	95% Confidence Interval of the Difference	Lower	Upper
	t	df	One-Sided p	Two-Sided p				
			WTFT	98.683	20	<.001	<.001	259.619

What is the p-value?  $P$  is less than 0.001

What is the decision rule (do we reject the null OR fail to reject the null)? If the  $P$ -value is small, you reject the null, If the  $p$ -value is less than or equal to the level of significance (0.05) then reject the null.

0.0001 compare 0.05 - the decision rule is to reject the null. The evidence supports the alternative that the true average weight of all football players is not equal to 250 lbs.

What is the real-world conclusion? The true average weight of all football players is not equal to 250 lbs.

**Step 5 (15 pts):** Do you think it is wise to use this sample data to make inferences and conclusions about the true weights for pro football and basketball players? Why or why not?

Hint: There are two things related to sampling that should likely be discussed in your answer.

- 1) We used a convenience sample. It is a non-probability-based approach and therefore does not guarantee any type of random sampling. We want a random sample to have a fair and representative sample of the entire population.
- 2) The sample size is small. You want the sample size to be 30 or greater. They used 21 players.