

```

FREQUENCIES VARIABLES=X
  /FORMAT=NOTABLE
  /NTILES=4
  /STATISTICS=STDDEV VARIANCE MEAN
  /HISTOGRAM NORMAL
  /ORDER=ANALYSIS.

```

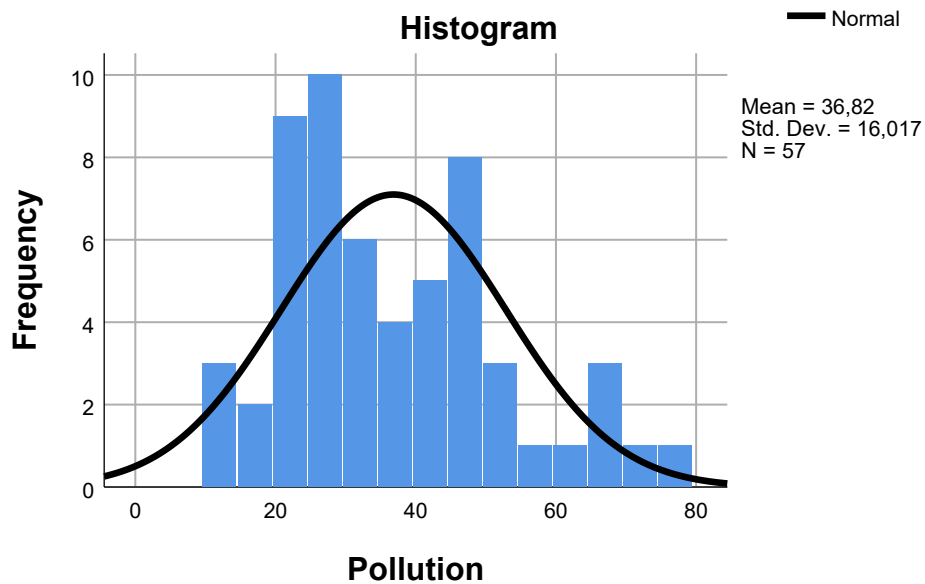
## Frequencies

[DataSet1] Lab\_Extra\_1\_Pollution\_Data.sav

### Statistics

Pollution

N	Valid	57
	Missing	0
Mean		36,82
Std. Deviation		16,017
Variance		256,540
Percentiles	25	24,50
	50	32,00
	75	48,50



```

EXAMINE VARIABLES=X
  /PLOT BOXPLOT STEMLEAF HISTOGRAM NPLOT
  /COMPARE GROUPS
  /PERCENTILES(5, 10, 25, 50, 75, 90, 95) HAVERAGE
  /STATISTICS DESCRIPTIVES
  /CINTERVAL 90

```

/MISSING LISTWISE

/NOTOTAL.

## Explore

[DataSet1] Lab\_Extra\_1\_Pollution\_Data.sav

### Case Processing Summary

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
Pollution (mgr/cm <sup>3</sup> )	57	100,0%	0	0,0%	57	100,0%

### Descriptives

		Statistic	Std. Error	
Pollution (mgr/cm <sup>3</sup> )	Mean	36,82	2,121	
	90% Confidence Interval for Mean	Lower Bound	33,28	
		Upper Bound	40,37	
	5% Trimmed Mean	36,12		
	Median	32,00		
	Variance	256,540		
	Std. Deviation	16,017		
	Minimum	12		
	Maximum	79		
	Range	67		
	Interquartile Range	24		
	Skewness	,725	,316	
	Kurtosis	,003	,623	

### Percentiles

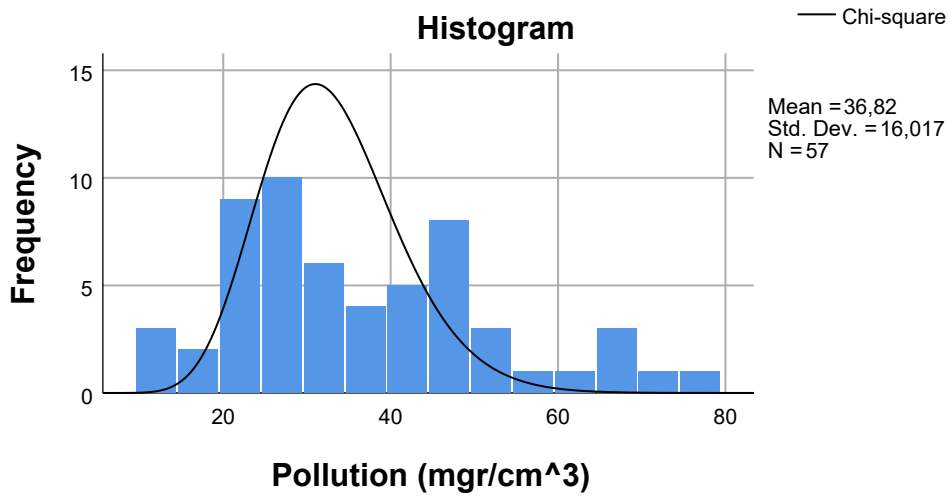
		Percentiles						
		5	10	25	50	75	90	95
Weighted Average (Definition 1)	Pollution (mgr/cm <sup>3</sup> )	12,00	20,60	24,50	32,00	48,50	63,40	69,50
Tukey's Hinges	Pollution (mgr/cm <sup>3</sup> )			25,00	32,00	48,00		

### Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pollution (mgr/cm <sup>3</sup> )	,145	57	,005	,941	57	,008

a. Lilliefors Significance Correction

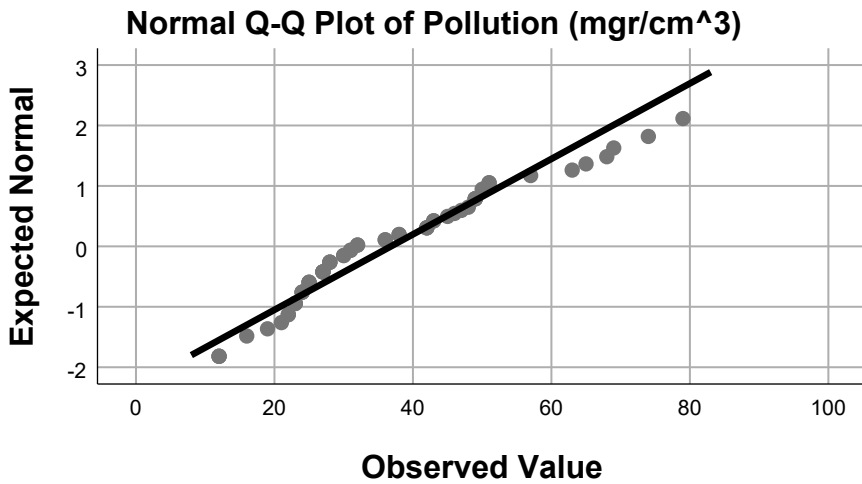
## Pollution (mgr/cm<sup>3</sup>)

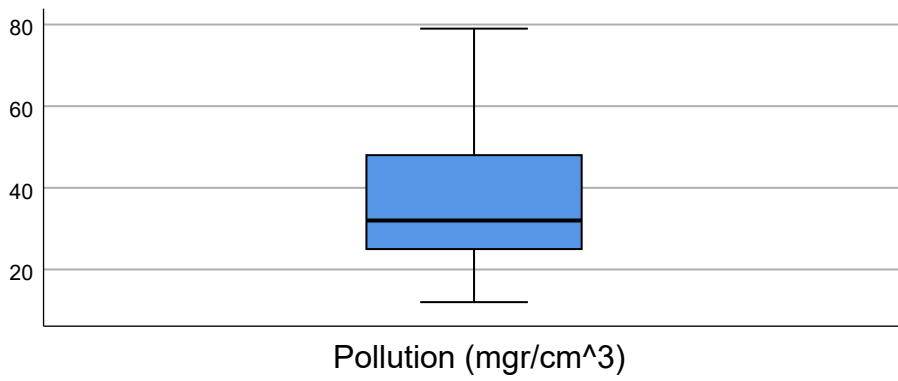


Pollution (mgr/cm<sup>3</sup>) Stem-and-Leaf Plot

Frequency	Stem & Leaf
5,00	1 . 22269
19,00	2 . 1223334445557777888
10,00	3 . 0011226688
13,00	4 . 2223356789999
4,00	5 . 0117
4,00	6 . 3589
2,00	7 . 49

Stem width: 10  
Each leaf: 1 case(s)





```

NEW FILE.
DATASET NAME DataSet2 WINDOW=FRONT.
WEIGHT BY Frequency.
FREQUENCIES VARIABLES=X
  /NTILES=4
  /PERCENTILES=10.0 90.0
  /STATISTICS=STDDEV VARIANCE MINIMUM MAXIMUM MEAN MEDIAN MODE
  /BARCHART PERCENT
  /ORDER=ANALYSIS.

```

## Frequencies

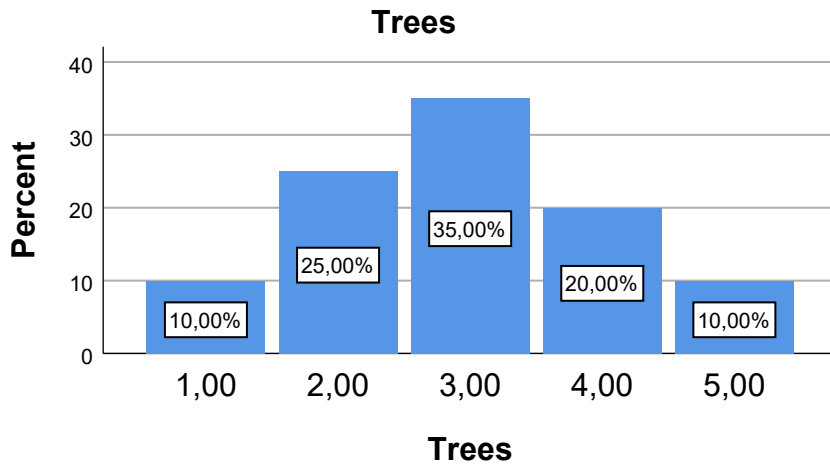
[DataSet2] Lab\_Extra\_1\_Tree\_Data.sav

### Statistics

Trees		
N	Valid	40
	Missing	0
Mean		2,9500
Median		3,0000
Mode		3,00
Std. Deviation		1,13114
Variance		1,279
Minimum		1,00
Maximum		5,00
Percentiles	10	1,1000
	25	2,0000
	50	3,0000
	75	4,0000
	90	4,9000

### Trees

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	4	10,0	10,0	10,0
	2,00	10	25,0	25,0	35,0
	3,00	14	35,0	35,0	70,0
	4,00	8	20,0	20,0	90,0
	5,00	4	10,0	10,0	100,0
Total		40	100,0	100,0	



Cases weighted by Frequency

NEW FILE.

DATASET NAME DataSet3 WINDOW=FRONT.

WEIGHT BY Frequency.

COMPUTE X1=X + 2.

EXECUTE.

COMPUTE X2=X \* 2.

EXECUTE.

WEIGHT BY Frequency.

FREQUENCIES VARIABLES=X X1 X2

/NTILES=4

/STATISTICS=STDDEV MEAN MEDIAN MODE

/GROUPED=X X1 X2

/HISTOGRAM NORMAL

/ORDER=ANALYSIS.

### Frequencies

[DataSet3] Lab\_Extra\_1\_PollutionB\_Data.sav

## Statistics

		Pollution Center Values	X1	X2
N	Valid	80	80	80
	Missing	0	0	0
Mean		18,9000	20,9000	37,8000
Median		19,0952 <sup>a</sup>	21,0952 <sup>a</sup>	38,1905 <sup>a</sup>
Mode		19,00	21,00	38,00
Std. Deviation		5,54749	5,54749	11,09499
Percentiles	25	15,0000 <sup>b</sup>	17,0000 <sup>b</sup>	30,0000 <sup>b</sup>
	50	19,0952	21,0952	38,1905
	75	22,9048	24,9048	45,8095

a. Calculated from grouped data.

b. Percentiles are calculated from grouped data.

## Frequency Table

### Pollution Center Values

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	7,00	3	3,8	3,8	3,8
	11,00	10	12,5	12,5	16,3
	15,00	14	17,5	17,5	33,8
	19,00	25	31,3	31,3	65,0
	23,00	17	21,3	21,3	86,3
	27,00	9	11,3	11,3	97,5
	31,00	2	2,5	2,5	100,0
	Total	80	100,0	100,0	

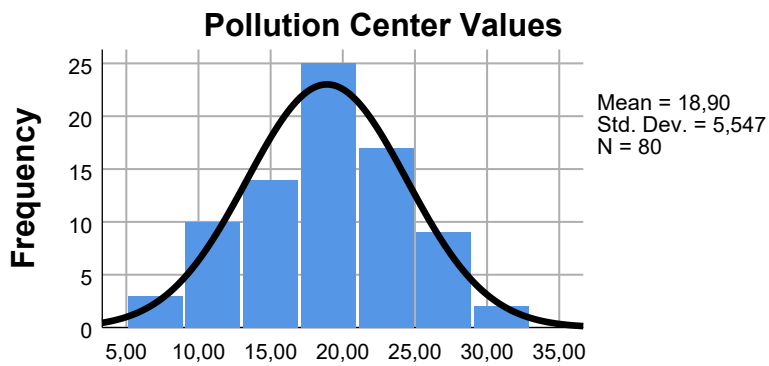
### X1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	9,00	3	3,8	3,8	3,8
	13,00	10	12,5	12,5	16,3
	17,00	14	17,5	17,5	33,8
	21,00	25	31,3	31,3	65,0
	25,00	17	21,3	21,3	86,3
	29,00	9	11,3	11,3	97,5
	33,00	2	2,5	2,5	100,0
	Total	80	100,0	100,0	

## X2

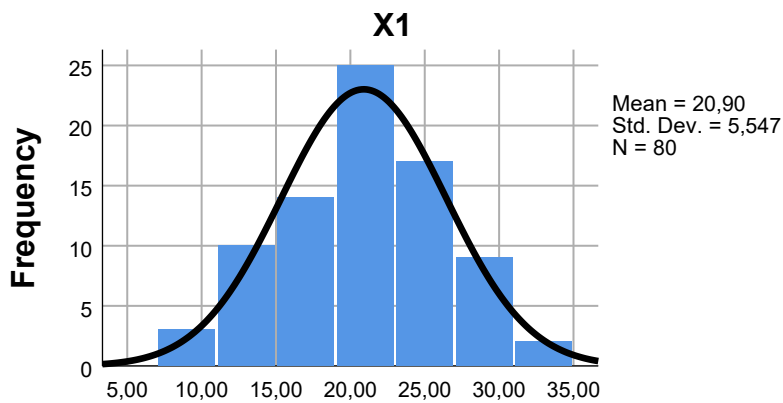
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	14,00	3	3,8	3,8
	22,00	10	12,5	16,3
	30,00	14	17,5	33,8
	38,00	25	31,3	65,0
	46,00	17	21,3	86,3
	54,00	9	11,3	97,5
	62,00	2	2,5	100,0
Total	80	100,0	100,0	

## Histogram



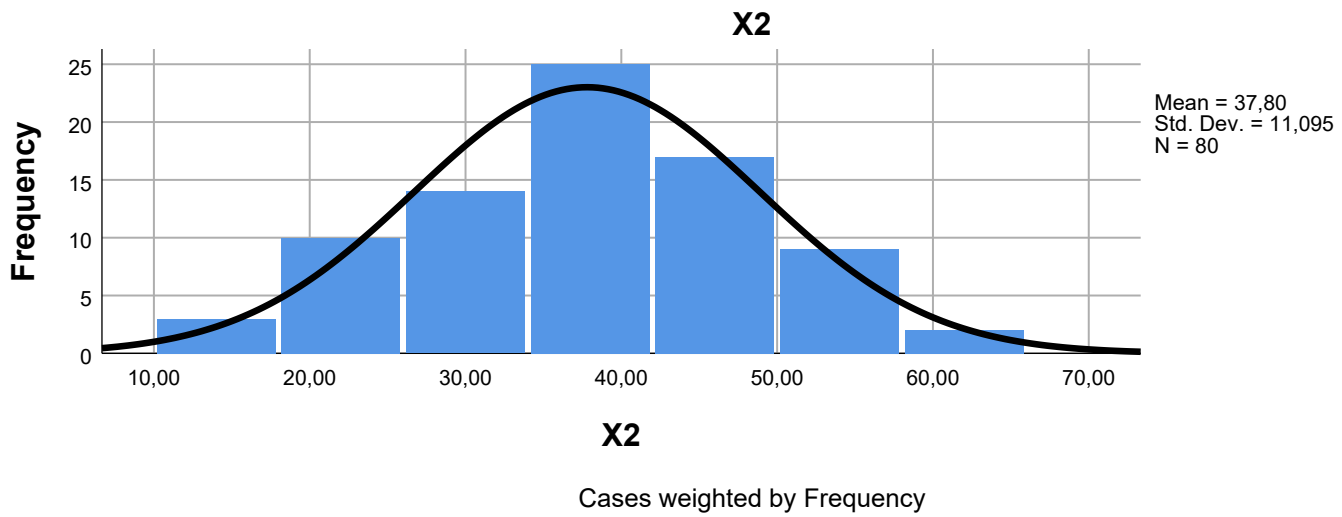
## Pollution Center Values

Cases weighted by Frequency



## X1

Cases weighted by Frequency



```
T-TEST
/TESTVAL=0
/MISSING=ANALYSIS
/VARIABLES=X
/CRITERIA=CI (.90) .
```

## T-Test

### One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Pollution Center Values	80	18,9000	5,54749	,62023

### One-Sample Test

	t	df	Sig. (2-tailed)	Mean Difference	90% Confidence Interval of the Difference	
					Lower	Upper
Pollution Center Values	30,473	79	,000	18,90000	17,8677	19,9323

```
T-TEST
/TESTVAL=15
/MISSING=ANALYSIS
/VARIABLES=X
/CRITERIA=CI (.90) .
```

## T-Test



### One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Pollution Center Values	80	18,9000	5,54749	,62023

### One-Sample Test

	t	df	Sig. (2-tailed)	Mean Difference	90% Confidence Interval of the Difference	
					Lower	Upper
					Test Value = 15	
Pollution Center Values	6,288	79	,000	3,90000	2,8677	4,9323

```
T-TEST
/TESTVAL=15
/MISSING=ANALYSIS
/VARIABLES=X
/CRITERIA=CI(.90).
```

### T-Test

### One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Pollution Center Values	80	18,9000	5,54749	,62023

### One-Sample Test

	t	df	Sig. (2-tailed)	Mean Difference	90% Confidence Interval of the Difference	
					Lower	Upper
					Test Value = 19	
Pollution Center Values	-,161	79	,872	-,10000	-1,1323	,9323

```
EXAMINE VARIABLES=X
/PLOT BOXPLOT NPLOT
/COMPARE GROUPS
/STATISTICS DESCRIPTIVES
/CINTERVAL 90
/MISSING LISTWISE
/NOTOTAL.
```

### Explore

## Case Processing Summary

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
Pollution Center Values	80	100,0%	0	0,0%	80	100,0%

## Descriptives

		Statistic	Std. Error	
Pollution Center Values	Mean	18,9000	,62023	
	90% Confidence Interval for Mean	Lower Bound	17,8677	
		Upper Bound	19,9323	
	5% Trimmed Mean	18,9444		
	Median	19,0000		
	Variance	30,775		
	Std. Deviation	5,54749		
	Minimum	7,00		
	Maximum	31,00		
	Range	24,00		
	Interquartile Range	8,00		
	Skewness	-,100	,269	
	Kurtosis	-,395	,532	

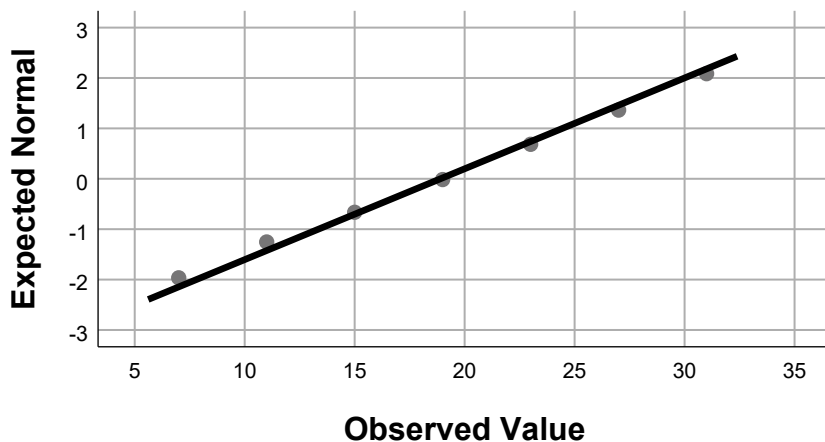
## Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pollution Center Values	,170	80	,000	,949	80	,003

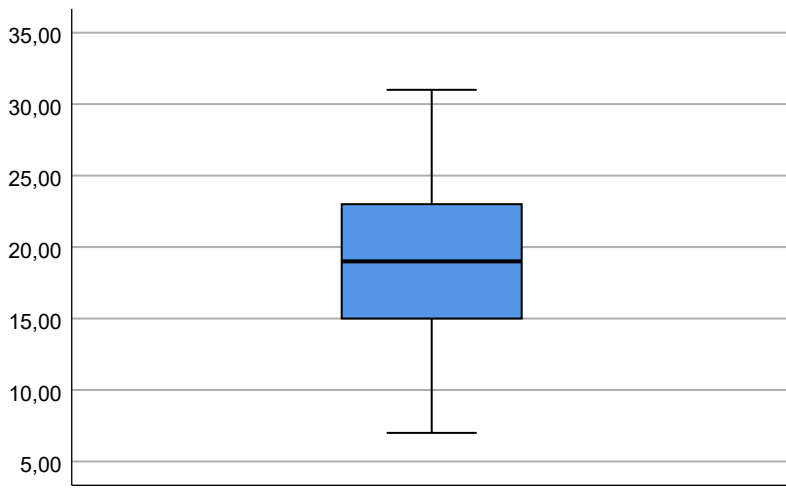
a. Lilliefors Significance Correction

## Pollution Center Values

Normal Q-Q Plot of Pollution Center Values



Cases weighted by Frequency



Pollution Center Values

Cases weighted by Frequency

```

NEW FILE.
DATASET NAME DataSet4 WINDOW=FRONT.
NEW FILE.
DATASET NAME DataSet5 WINDOW=FRONT.
EXAMINE VARIABLES=XY BY Group
  /PLOT BOXPLOT NPLOT
  /COMPARE GROUPS
  /STATISTICS DESCRIPTIVES
  /CINTERVAL 95
  /MISSING LISTWISE
  /NOTOTAL.

```

## Explore

[DataSet5] Lab\_Extra\_1\_Protein\_Data.sav

## Group

### Case Processing Summary

	Group	Cases					
		Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
Protein	A	8	100,0%	0	0,0%	8	100,0%
	B	9	100,0%	0	0,0%	9	100,0%

## Descriptives

Group		Statistic	Std. Error		
Protein	A	Mean	7,2613	,11256	
		95% Confidence Interval for Mean	Lower Bound	6,9951	
			Upper Bound	7,5274	
		5% Trimmed Mean	7,2703		
		Median	7,2650		
		Variance	,101		
		Std. Deviation	,31836		
		Minimum	6,69		
		Maximum	7,67		
		Range	,98		
		Interquartile Range	,49		
		Skewness	-,540	,752	
		Kurtosis	,076	1,481	
	B	Mean	7,5578	,20859	
		95% Confidence Interval for Mean	Lower Bound	7,0768	
			Upper Bound	8,0388	
		5% Trimmed Mean	7,5875		
		Median	7,6500		
		Variance	,392		
		Std. Deviation	,62576		
Minimum		6,30			
Maximum		8,28			
Range		1,98			
Interquartile Range	,91				
Skewness	-,918	,717			
Kurtosis	,701	1,400			

## Tests of Normality

Group	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Protein A	,119	8	,200*	,970	8	,897
Protein B	,158	9	,200*	,933	9	,509

\*. This is a lower bound of the true significance.

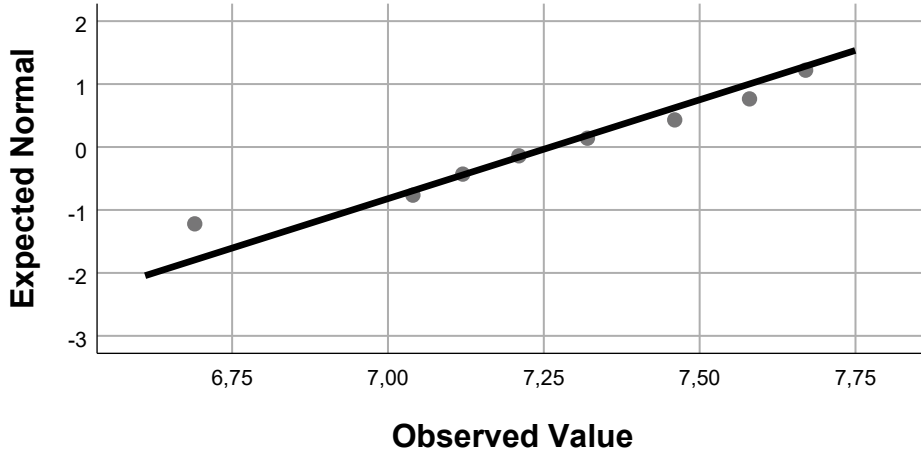
a. Lilliefors Significance Correction

## Protein

### Normal Q-Q Plots

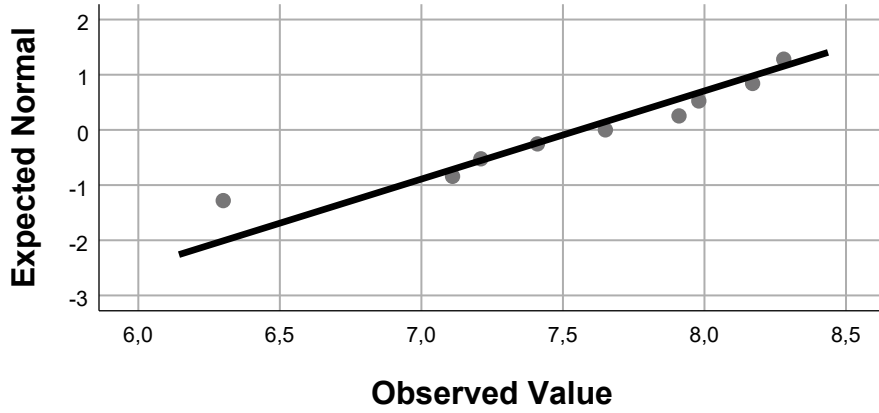
### Normal Q-Q Plot of Protein

for Group= A

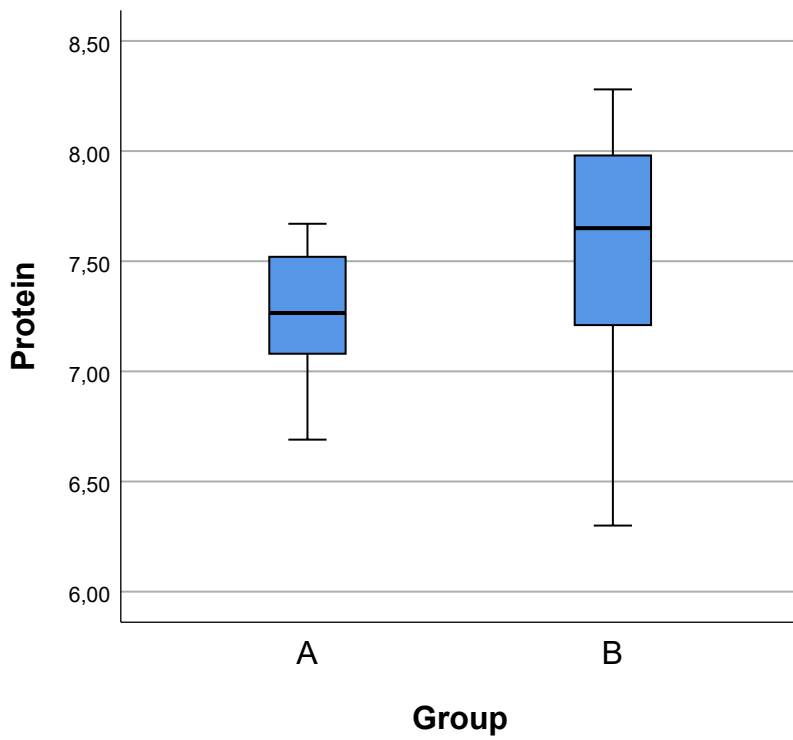


### Normal Q-Q Plot of Protein

for Group= B



### Detrended Normal Q-Q Plots



```
T-TEST GROUPS=Group('A' 'B')
/MISSING=ANALYSIS
/VARIABLES=XY
/CRITERIA=CI(.95).
```

## T-Test

### Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Protein	A	8	7,2612	,31836	,11256
	B	9	7,5578	,62576	,20859

### Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Protein	Equal variances assumed	3,114	,098	-1,206	15	,247	-,29653
	Equal variances not assumed			-1,251	12,159	,234	-,29653

## Independent Samples Test

		t-test for Equality of Means		
		Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
Protein	Equal variances assumed	,24592	-,82069	,22764
	Equal variances not assumed	,23702	-,81219	,21914

```
T-TEST GROUPS=Group('A' 'B')
/MISSING=ANALYSIS
/VARIABLES=XY
/CRITERIA=CI(.90).
```

## T-Test

### Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Protein	A	8	7,2612	,31836	,11256
	B	9	7,5578	,62576	,20859

## Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Protein	Equal variances assumed	3,114	,098	-1,206	15	,247	-,29653
	Equal variances not assumed			-1,251	12,159	,234	-,29653

## Independent Samples Test

		t-test for Equality of Means		
		Std. Error Difference	90% Confidence Interval of the Difference	
			Lower	Upper
Protein	Equal variances assumed	,24592	-,72764	,13458
	Equal variances not assumed	,23702	-,71850	,12544

```
T-TEST GROUPS=Group('A' 'B')
```

```

/MISSING=ANALYSIS
/VARIABLES=XY
/CRITERIA=CI(.75).

```

## Explore

[DataSet1] Lab\_Extra\_1\_Pollution\_Data.sav

### Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Pollution	57	100,0%	0	0,0%	57	100,0%

### Descriptives

		Statistic	Std. Error	
Pollution	Mean	36,82	2,121	
	90% Confidence Interval for Mean	Lower Bound	33,28	
		Upper Bound	40,37	
	5% Trimmed Mean	36,12		
	Median	32,00		
	Variance	256,540		
	Std. Deviation	16,017		
	Minimum	12		
	Maximum	79		
	Range	67		
	Interquartile Range	24		
	Skewness	,725	,316	
	Kurtosis	,003	,623	

### Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pollution	,145	57	,005	,941	57	,008

a. Lilliefors Significance Correction

## T-Test

### Group Statistics

		Group	N	Mean	Std. Deviation	Std. Error Mean
Protein	A		8	7,2612	,31836	,11256
	B		9	7,5578	,62576	,20859



### Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Protein	Equal variances assumed	3,114	,098	-1,206	15	,247	-,29653
	Equal variances not assumed			-1,251	12,159	,234	-,29653

### Independent Samples Test

		t-test for Equality of Means		
		Std. Error Difference	75% Confidence Interval of the Difference	
			Lower	Upper
Protein	Equal variances assumed	,24592	-,59082	-,00224
	Equal variances not assumed	,23702	-,58286	-,01020