Program Summary - SMU v SEA Log Transformaiton.sas

Execution Environment

Author:	philliph@smu.edu
File:	/home/philliph0/MSDS 6371 Stats Foundation/Unit 3/SMU v SEA Log Transformaiton.sas
SAS Platform:	Linux LIN X64 3.10.0-693.21.1.el7.x86_64
SAS Host:	ODAWS03.ODA.SAS.COM
SAS Version:	9.04.01M5P09132017
SAS Locale:	en_US
Submission Time:	11/25/2018, 8:48:53 PM
Browser Host:	C-24-22-245-225.HSD1.WA.COMCAST.NET
User Agent:	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/64.0.3282.140 Safari/537.36 Edge/18.17763
Application Server:	ODAMID00-PROD-US.ODA.SAS.COM

Code: SMU v SEA Log Transformaiton.sas

```sas
/* Title: Unit 2 - Homework - SaS Code - Problem 2 - SMU v SEA Log Transformation
 * By: Phillip Hale
 * Date: 11/25/2018
 */


data polls;
input result school $;
datalines;
34 SMU
1200 SMU
23 SMU
50 SMU
60 SMU
50 SMU
0 SMU
0 SMU
30 SMU
89 SMU
0 SMU
300 SMU
100 SEA
110 SEA
0 SEA
40 SEA
400 SMU
20 SMU
10 SMU
0 SMU
20 SEA
10 SEA
5 SEA
0 SEA
30 SEA
50 SEA
0 SEA
10 SEA
3 SEA
0 SEA
;

/* Print polling data */
proc print data = polls;
run;

proc ttest data = polls alpha = .05 sides=2 order=data;
class school;
var result;
run;

/* Encode String Variables for T-Test processing (class needs to be binary/numeric)
 * 0 = SEA
 * 1 = SMU
 */
data polls;
set polls;
decision_result = 1; *changing text variable to numeric;
if (school = "SMU") then decision_result = 0;
run;

proc sort data = polls;
by decision_result;
run;
proc print data = polls;
run;
```

Log: SMU v SEA Log;Transformaiton.sas

Notes (30)

```
1          OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
70
71         /* Title: Unit 2 - Homework - SaS Code - Problem 2 - SMU v SEA Log Transformation
72          * By: Phillip Hale
73          * Date: 11/25/2018
74          */
/* Check for Normality
*/
```

```
proc univariate data=polls normal;
qqplot result /Normal(mu=est sigma=est color=red l=1);
by decision_result;
run;

/* Log transform */
data polls;
set polls;
logresult = log(result);
run;

/*
 * Check for normality
 */
proc univariate data=polls normal;
qqplot logresult /Normal(mu=est sigma=est color=red l=1);
by decision_result;
run;

/*
 * Step 2: Draw and Share and Find the Critical Value
 * alpha = 0.05
 * critical value =
 * draw and shade = refer to R code for this section as these valuses for calc is identical
 */
data criticalvalue;
critical = quantile("T", 0.975, 20);
;

proc ttest data = polls alpha = .05 sides=2 order=data;
class school;
var logresult;
run;
```

```
75
76
77          data polls;
78          input result school $;
79          datalines;
NOTE: The data set WORK.POLLS has 30 observations and 2 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      user cpu time       0.00 seconds
      system cpu time     0.00 seconds
      memory              528.00k
      OS Memory           38840.00k
      Timestamp           11/26/2018 04:48:51 AM
      Step Count                        226  Switch Count  2
      Page Faults                       0
      Page Reclaims                     91
      Page Swaps                        0
      Voluntary Context Switches        9
      Involuntary Context Switches      0
      Block Input Operations            0
      Block Output Operations           264
100         ;
101
102
103         /* Print polling data */
104         proc print data = polls;
105         run;
NOTE: There were 30 observations read from the data set WORK.POLLS.
NOTE: PROCEDURE PRINT used (Total process time):
      real time           0.03 seconds
      user cpu time       0.03 seconds
      system cpu time     0.00 seconds
      memory              1658.59k
      OS Memory           38840.00k
      Timestamp           11/26/2018 04:48:51 AM
      Step Count                        227  Switch Count  0
      Page Faults                       0
      Page Reclaims                     64
      Page Swaps                        0
      Voluntary Context Switches        0
      Involuntary Context Switches      0
      Block Input Operations            0
      Block Output Operations           8
115
116         proc ttest data = polls alpha = .05 sides=2 order=data;
117         class school;
118         var result;
119         run;

NOTE: PROCEDURE TTEST used (Total process time):
      real time           0.46 seconds
      user cpu time       0.18 seconds
      system cpu time     0.07 seconds
      memory              21890.75k
      OS Memory           54500.00k
      Timestamp           11/26/2018 04:48:52 AM
      Step Count                        228  Switch Count  48
      Page Faults                       0
      Page Reclaims                     28046
      Page Swaps                        0
      Voluntary Context Switches        1168
      Involuntary Context Switches      0
      Block Input Operations            0
      Block Output Operations           1232
120
121         /* Encode String Variables for T-Test processing (class needs to be binary/numeric)
122          * 0 = SEA
123          * 1 = SMU
124          */
125         data polls;
126         set polls;
127         decision_result = 1; *changing text variable to numeric;
128         if (school = "SMU") then decision_result = 0;
129         run;
```

```
NOTE: There were 30 observations read from the data set WORK.POLLS.
NOTE: The data set WORK.POLLS has 30 observations and 3 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      user cpu time       0.00 seconds
      system cpu time     0.00 seconds
      memory              812.59k
      OS Memory           49348.00k
      Timestamp           11/26/2018 04:48:52 AM
      Step Count                        229  Switch Count  2
      Page Faults                       0
      Page Reclaims                     124
      Page Swaps                        0
      Voluntary Context Switches        11
      Involuntary Context Switches      0
      Block Input Operations            0
      Block Output Operations           264


130
131        proc sort data = polls;
132        by decision_result;
133        run;

NOTE: There were 30 observations read from the data set WORK.POLLS.
NOTE: The data set WORK.POLLS has 30 observations and 3 variables.
NOTE: PROCEDURE SORT used (Total process time):
      real time           0.00 seconds
      user cpu time       0.00 seconds
      system cpu time     0.00 seconds
      memory              800.56k
      OS Memory           49348.00k
      Timestamp           11/26/2018 04:48:52 AM
      Step Count                        230  Switch Count  2
      Page Faults                       0
      Page Reclaims                     114
      Page Swaps                        0
      Voluntary Context Switches        10
      Involuntary Context Switches      0
      Block Input Operations            0
      Block Output Operations           264


134
135        proc print data = polls;
136        run;

NOTE: There were 30 observations read from the data set WORK.POLLS.
NOTE: PROCEDURE PRINT used (Total process time):
      real time           0.03 seconds
      user cpu time       0.04 seconds
      system cpu time     0.00 seconds
      memory              638.37k
      OS Memory           49088.00k
      Timestamp           11/26/2018 04:48:52 AM
      Step Count                        231  Switch Count  0
      Page Faults                       0
      Page Reclaims                     66
      Page Swaps                        0
      Voluntary Context Switches        0
      Involuntary Context Switches      0
      Block Input Operations            0
      Block Output Operations           16


137
138
139        /*
140         * Check for Normality
141         */
142
143        proc univariate data=polls normal;
144        qqplot result /Normal(mu=est sigma=est color=red l=1);
145        by decision_result;
146        run;

NOTE: PROCEDURE UNIVARIATE used (Total process time):
      real time           0.33 seconds
      user cpu time       0.23 seconds
      system cpu time     0.00 seconds
```

```
      memory             8620.78k
      OS Memory          54820.00k
      Timestamp          11/26/2018 04:48:52 AM
      Step Count                       232  Switch Count  0
      Page Faults                      0
      Page Reclaims                    2030
      Page Swaps                       0
      Voluntary Context Switches       381
      Involuntary Context Switches     0
      Block Input Operations           0
      Block Output Operations          664


147
148
149       /* Log Transformation */
150       data polls;
151       set polls;
152       logresult = log(result);
153       run;

NOTE: Invalid argument to function LOG(0) at line 152 column 13.
result=0 school=SMU decision_result=0 logresult=. _ERROR_=1 _N_=7
NOTE: Invalid argument to function LOG(0) at line 152 column 13.
result=0 school=SMU decision_result=0 logresult=. _ERROR_=1 _N_=8
NOTE: Invalid argument to function LOG(0) at line 152 column 13.
result=0 school=SMU decision_result=0 logresult=. _ERROR_=1 _N_=11
NOTE: Invalid argument to function LOG(0) at line 152 column 13.
result=0 school=SMU decision_result=0 logresult=. _ERROR_=1 _N_=16
NOTE: Invalid argument to function LOG(0) at line 152 column 13.
result=0 school=SEA decision_result=1 logresult=. _ERROR_=1 _N_=19
NOTE: Invalid argument to function LOG(0) at line 152 column 13.
result=0 school=SEA decision_result=1 logresult=. _ERROR_=1 _N_=24
NOTE: Invalid argument to function LOG(0) at line 152 column 13.
result=0 school=SEA decision_result=1 logresult=. _ERROR_=1 _N_=27
NOTE: Invalid argument to function LOG(0) at line 152 column 13.
result=0 school=SEA decision_result=1 logresult=. _ERROR_=1 _N_=30
NOTE: Mathematical operations could not be performed at the following places. The results of the operations have been set to
      missing values.
      Each place is given by: (Number of times) at (Line):(Column).
      8 at 152:13
NOTE: There were 30 observations read from the data set WORK.POLLS.
NOTE: The data set WORK.POLLS has 30 observations and 4 variables.
NOTE: DATA statement used (Total process time):
      real time          0.00 seconds
      user cpu time      0.00 seconds
      system cpu time    0.00 seconds
      memory             802.75k
      OS Memory          50628.00k
      Timestamp          11/26/2018 04:48:52 AM
      Step Count                       233  Switch Count  2
      Page Faults                      0
      Page Reclaims                    123
      Page Swaps                       0
      Voluntary Context Switches       9
      Involuntary Context Switches     0
      Block Input Operations           0
      Block Output Operations          264


154
155       /*
156        * Check for Normality
157        */
158
159       proc univariate data=polls normal;
160       qqplot logresult /Normal(mu=est sigma=est color=red l=1);
161       by decision_result;
162       run;

NOTE: PROCEDURE UNIVARIATE used (Total process time):
      real time          0.45 seconds
      user cpu time      0.35 seconds
      system cpu time    0.00 seconds
      memory             8390.43k
      OS Memory          55332.00k
      Timestamp          11/26/2018 04:48:53 AM
      Step Count                       234  Switch Count  0
      Page Faults                      0
      Page Reclaims                    1874
      Page Swaps                       0
```

```
      Voluntary Context Switches        379
      Involuntary Context Switches      0
      Block Input Operations            0
      Block Output Operations           720


163
164       /* Step 2: Draw and Share and Find the Critical Value
165        * alpha = 0.05
166        * critical value =
167        * draw and shade = refer to R code for this section as these valuses for calc is identical
168       */
169
170       data criticalvalue;
171       critical = quantile("T",0.975, 20);
172       ;
173

NOTE: The data set WORK.CRITICALVALUE has 1 observations and 1 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      user cpu time       0.00 seconds
      system cpu time     0.00 seconds
      memory              520.75k
      OS Memory           50880.00k
      Timestamp           11/26/2018 04:48:53 AM
      Step Count                        235  Switch Count  2
      Page Faults                       0
      Page Reclaims                     88
      Page Swaps                        0
      Voluntary Context Switches        9
      Involuntary Context Switches      0
      Block Input Operations            0
      Block Output Operations           264

174       proc ttest data = polls alpha = .05 sides=2 order=data;

175       class school;
176       var logresult;
177       run;

NOTE: PROCEDURE TTEST used (Total process time):
      real time           0.42 seconds
      user cpu time       0.18 seconds
      system cpu time     0.06 seconds
      memory              10616.68k
      OS Memory           57836.00k
      Timestamp           11/26/2018 04:48:53 AM
      Step Count                        236  Switch Count  48
      Page Faults                       0
      Page Reclaims                     25558
      Page Swaps                        0
      Voluntary Context Switches        1110
      Involuntary Context Switches      0
      Block Input Operations            0
      Block Output Operations           1144


178
179
180       OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
192
```

Results: SMU v SEA Log Transformaiton.sas

Obs	result	school
1	34	SMU
2	1200	SMU
3	23	SMU
4	50	SMU
5	60	SMU
6	50	SMU
7	0	SMU
8	0	SMU
9	30	SMU
10	89	SMU
11	0	SMU
12	300	SMU

Obs	result	school
13	100	SEA
14	110	SEA
15	0	SEA
16	40	SEA
17	400	SMU
18	20	SMU
19	10	SMU
20	0	SMU
21	20	SEA
22	10	SEA
23	5	SEA
24	0	SEA
25	30	SEA
26	50	SEA
27	0	SEA
28	10	SEA
29	3	SEA
30	0	SEA

The TTEST Procedure

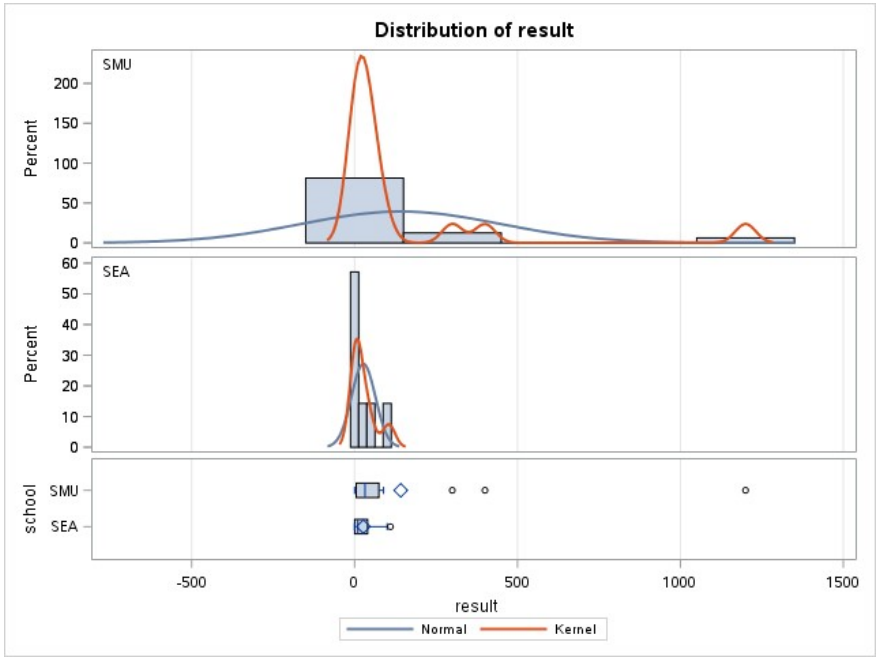
Variable: result

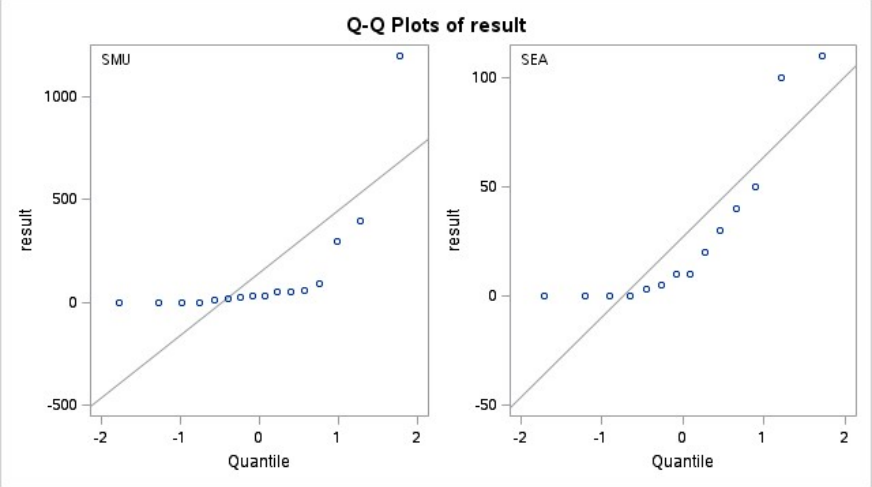
school	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
SMU		16	141.6	304.3	76.0670	0	1200.0
SEA		14	27.0000	36.7193	9.8136	0	110.0
Diff (1-2)	Pooled		114.6	224.1	82.0131		
Diff (1-2)	Satterthwaite		114.6		76.6974		

school	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
SMU		141.6	-20.5079	303.8	304.3	224.8	470.9
SEA		27.0000	5.7989	48.2011	36.7193	26.6198	59.1564
Diff (1-2)	Pooled	114.6	-53.3711	282.6	224.1	177.8	303.1
Diff (1-2)	Satterthwaite	114.6	-48.3948	277.6			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	28	1.40	0.1732
Satterthwaite	Unequal	15.499	1.49	0.1551

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	15	13	68.66	<.0001





Obs	result	school	decision_result
1	34	SMU	0
2	1200	SMU	0
3	23	SMU	0
4	50	SMU	0
5	60	SMU	0
6	50	SMU	0
7	0	SMU	0
8	0	SMU	0
9	30	SMU	0
10	89	SMU	0
11	0	SMU	0
12	300	SMU	0
13	400	SMU	0
14	20	SMU	0
15	10	SMU	0
16	0	SMU	0
17	100	SEA	1
18	110	SEA	1
19	0	SEA	1
20	40	SEA	1
21	20	SEA	1
22	10	SEA	1
23	5	SEA	1
24	0	SEA	1
25	30	SEA	1
26	50	SEA	1
27	0	SEA	1
28	10	SEA	1
29	3	SEA	1
30	0	SEA	1

The UNIVARIATE Procedure
Variable: result

decision_result=0

Moments			
N	16	Sum Weights	16
Mean	141.625	Sum Observations	2266
Std Deviation	304.267837	Variance	92578.9167
Skewness	3.20460293	Kurtosis	10.9691183
Uncorrected SS	1709606	Corrected SS	1388683.75
Coeff Variation	214.840485	Std Error Mean	76.0669593

Basic Statistical Measures			
Location		Variability	
Mean	141.6250	Std Deviation	304.26784
Median	32.0000	Variance	92579

Basic Statistical Measures			
Location		Variability	
Mode	0.0000	Range	1200
		Interquartile Range	69.50000

Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	1.861846	Pr > |t|	0.0823
Sign	M	6	Pr >= |M|	0.0005
Signed Rank	S	39	Pr >= |S|	0.0005

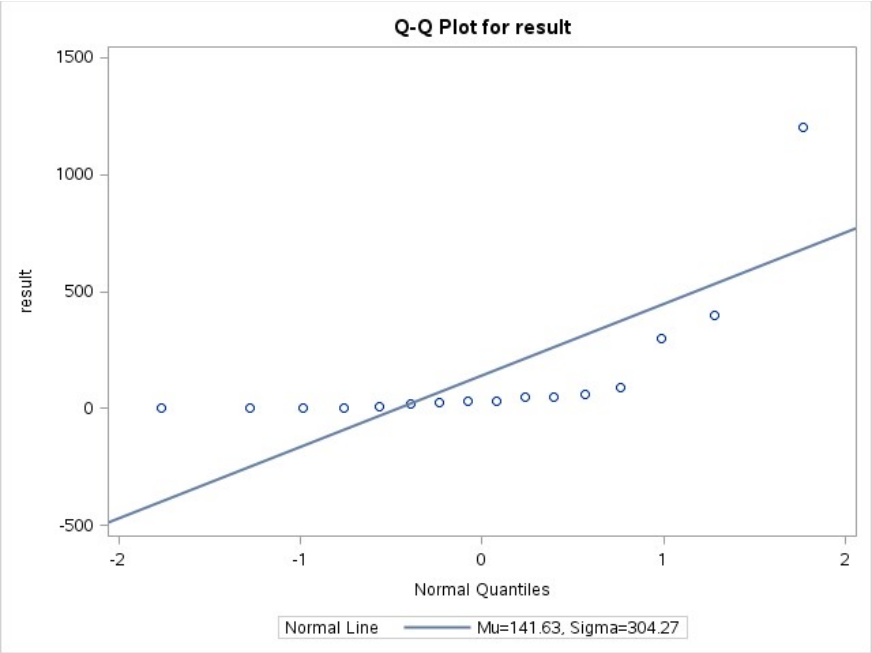
Tests for Normality				
Test	Statistic		p Value	
Shapiro-Wilk	W	0.511885	Pr < W	<0.0001
Kolmogorov-Smirnov	D	0.381157	Pr > D	<0.0100
Cramer-von Mises	W-Sq	0.606316	Pr > W-Sq	<0.0050
Anderson-Darling	A-Sq	3.14562	Pr > A-Sq	<0.0050

Quantiles (Definition 5)	
Level	Quantile
100% Max	1200.0
99%	1200.0
95%	1200.0
90%	400.0
75% Q3	74.5
50% Median	32.0
25% Q1	5.0
10%	0.0
5%	0.0
1%	0.0
0% Min	0.0

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
0	16	60	5
0	11	89	10
0	8	300	12
0	7	400	13
10	15	1200	2

The UNIVARIATE Procedure

decision_result=0



The UNIVARIATE Procedure
Variable: result

decision_result=1

Moments			
N	14	Sum Weights	14
Mean	27	Sum Observations	378
Std Deviation	36.7193095	Variance	1348.30769
Skewness	1.5622031	Kurtosis	1.47889388
Uncorrected SS	27734	Corrected SS	17528
Coeff Variation	135.997443	Std Error Mean	9.81364827

Basic Statistical Measures			
Location		Variability	
Mean	27.00000	Std Deviation	36.71931
Median	10.00000	Variance	1348
Mode	0.00000	Range	110.00000
		Interquartile Range	40.00000

Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	2.75127	Pr > |t|	0.0165
Sign	M	5	Pr >= |M|	0.0020
Signed Rank	S	27.5	Pr >= |S|	0.0020

Tests for Normality				
Test	Statistic		p Value	
Shapiro-Wilk	W	0.753077	Pr < W	0.0014
Kolmogorov-Smirnov	D	0.249736	Pr > D	0.0187
Cramer-von Mises	W-Sq	0.229244	Pr > W-Sq	<0.0050
Anderson-Darling	A-Sq	1.370542	Pr > A-Sq	<0.0050

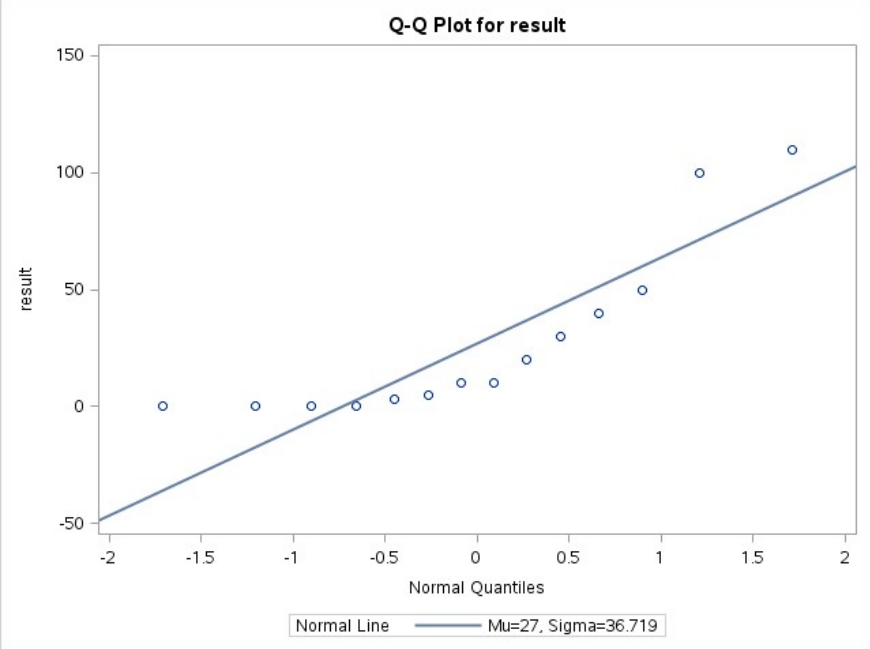
Quantiles (Definition 5)	
Level	Quantile
100% Max	110
99%	110
95%	110
90%	100
75% Q3	40
50% Median	10
25% Q1	0
10%	0

Quantiles (Definition 5)	
Level	Quantile
5%	0
1%	0
0% Min	0

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
0	30	30	25
0	27	40	20
0	24	50	26
0	19	100	17
3	29	110	18

The UNIVARIATE Procedure

decision_result=1



The UNIVARIATE Procedure
Variable: result

decision_result=0

Moments			
N	16	Sum Weights	16
Mean	141.625	Sum Observations	2266
Std Deviation	304.267837	Variance	92578.9167
Skewness	3.20460293	Kurtosis	10.9691183
Uncorrected SS	1709606	Corrected SS	1388683.75
Coeff Variation	214.840485	Std Error Mean	76.0669593

Basic Statistical Measures			
Location		Variability	
Mean	141.6250	Std Deviation	304.26784
Median	32.0000	Variance	92579
Mode	0.0000	Range	1200
		Interquartile Range	69.50000

Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	1.861846	Pr > |t|	0.0823
Sign	M	6	Pr >= |M|	0.0005

Tests for Location: Mu0=0				
Test	Statistic		p Value	
Signed Rank	S	39	Pr >= |S|	0.0005

Tests for Normality				
Test	Statistic		p Value	
Shapiro-Wilk	W	0.511885	Pr < W	<0.0001
Kolmogorov-Smirnov	D	0.381157	Pr > D	<0.0100
Cramer-von Mises	W-Sq	0.606316	Pr > W-Sq	<0.0050
Anderson-Darling	A-Sq	3.14562	Pr > A-Sq	<0.0050

Quantiles (Definition 5)	
Level	Quantile
100% Max	1200.0
99%	1200.0
95%	1200.0
90%	400.0
75% Q3	74.5
50% Median	32.0
25% Q1	5.0
10%	0.0
5%	0.0
1%	0.0
0% Min	0.0

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
0	16	60	5
0	11	89	10
0	8	300	12
0	7	400	13
10	15	1200	2

The UNIVARIATE Procedure
Variable: logresult

decision_result=0

Moments			
N	12	Sum Weights	12
Mean	4.21281002	Sum Observations	50.5537203
Std Deviation	1.39339709	Variance	1.94155544
Skewness	0.88086351	Kurtosis	0.18946987
Uncorrected SS	234.330329	Corrected SS	21.3571099
Coeff Variation	33.0752414	Std Error Mean	0.40223909

Basic Statistical Measures			
Location		Variability	
Mean	4.212810	Std Deviation	1.39340
Median	3.912023	Variance	1.94156
Mode	3.912023	Range	4.78749
		Interquartile Range	1.82786

Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	10.4734	Pr > |t|	<.0001
Sign	M	6	Pr >= |M|	0.0005
Signed Rank	S	39	Pr >= |S|	0.0005

Tests for Normality				
Test	Statistic		p Value	
Shapiro-Wilk	W	0.925026	Pr < W	0.3304
Kolmogorov-Smirnov	D	0.200544	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.083185	Pr > W-Sq	0.1756
Anderson-Darling	A-Sq	0.451608	Pr > A-Sq	0.2314

Quantiles (Definition 5)	
Level	Quantile

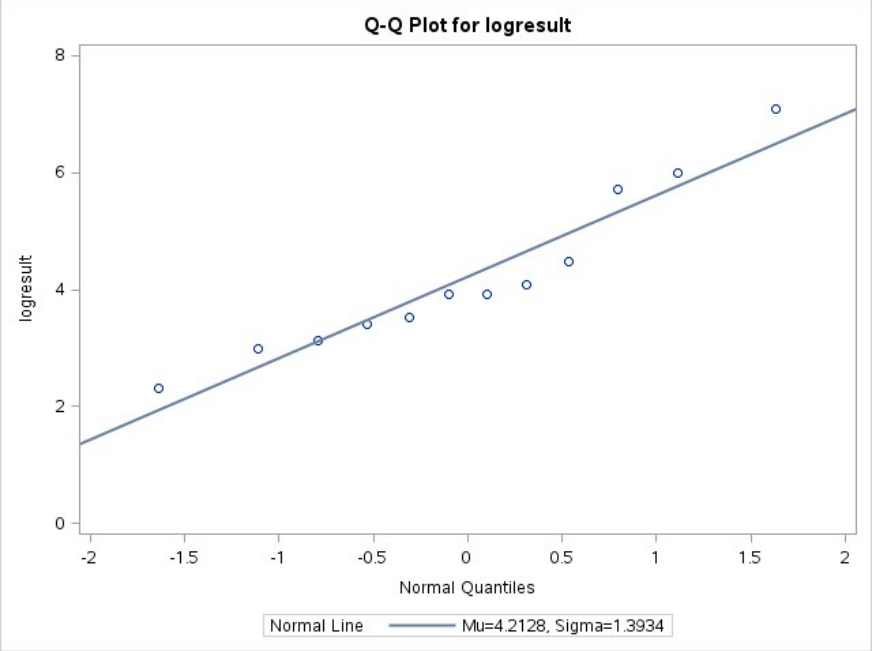
Quantiles (Definition 5)	
Level	**Quantile**
100% Max	7.09008
99%	7.09008
95%	7.09008
90%	5.99146
75% Q3	5.09621
50% Median	3.91202
25% Q1	3.26835
10%	2.99573
5%	2.30259
1%	2.30259
0% Min	2.30259

Extreme Observations			
Lowest		**Highest**	
Value	**Obs**	**Value**	**Obs**
2.30259	15	4.09434	5
2.99573	14	4.48864	10
3.13549	3	5.70378	12
3.40120	9	5.99146	13
3.52636	1	7.09008	2

Missing Values			
Missing Value	**Count**	**Percent Of**	
		All Obs	**Missing Obs**
.	4	25.00	100.00

The UNIVARIATE Procedure

decision_result=0



The UNIVARIATE Procedure
Variable: result

decision_result=1

Moments			
N	14	**Sum Weights**	14
Mean	27	**Sum Observations**	378
Std Deviation	36.7193095	**Variance**	1348.30769
Skewness	1.5622031	**Kurtosis**	1.47889388
Uncorrected SS	27734	**Corrected SS**	17528
Coeff Variation	135.997443	**Std Error Mean**	9.81364827

Basic Statistical Measures			
Location		**Variability**	
Mean	27.00000	**Std Deviation**	36.71931
Median	10.00000	**Variance**	1348
Mode	0.00000	**Range**	110.00000
		Interquartile Range	40.00000

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	2.75127	**Pr > |t|**	0.0165
Sign	**M**	5	**Pr >= |M|**	0.0020
Signed Rank	**S**	27.5	**Pr >= |S|**	0.0020

Tests for Normality				
Test	**Statistic**		**p Value**	
Shapiro-Wilk	**W**	0.753077	**Pr < W**	0.0014
Kolmogorov-Smirnov	**D**	0.249736	**Pr > D**	0.0187
Cramer-von Mises	**W-Sq**	0.229244	**Pr > W-Sq**	<0.0050
Anderson-Darling	**A-Sq**	1.370542	**Pr > A-Sq**	<0.0050

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	110
99%	110
95%	110
90%	100
75% Q3	40
50% Median	10
25% Q1	0
10%	0
5%	0
1%	0
0% Min	0

Extreme Observations			
Lowest		**Highest**	
Value	**Obs**	**Value**	**Obs**
0	30	30	25
0	27	40	20
0	24	50	26
0	19	100	17
3	29	110	18

The UNIVARIATE Procedure
Variable: logresult

decision_result=1

Moments			
N	10	**Sum Weights**	10
Mean	3.06167031	**Sum Observations**	30.6167031
Std Deviation	1.2210744	**Variance**	1.49102269
Skewness	-0.1924904	**Kurtosis**	-1.0463803
Uncorrected SS	107.157455	**Corrected SS**	13.4192042
Coeff Variation	39.8826222	**Std Error Mean**	0.38613763

Basic Statistical Measures			
Location		**Variability**	
Mean	3.061670	**Std Deviation**	1.22107
Median	3.198465	**Variance**	1.49102
Mode	2.302585	**Range**	3.60187
		Interquartile Range	1.60944

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	7.928961	**Pr > |t|**	<.0001
Sign	**M**	5	**Pr >= |M|**	0.0020
Signed Rank	**S**	27.5	**Pr >= |S|**	0.0020

Tests for Normality				
Test	**Statistic**		**p Value**	
Shapiro-Wilk	**W**	0.9569	**Pr < W**	0.7500
Kolmogorov-Smirnov	**D**	0.132915	**Pr > D**	>0.1500
Cramer-von Mises	**W-Sq**	0.026915	**Pr > W-Sq**	>0.2500
Anderson-Darling	**A-Sq**	0.193204	**Pr > A-Sq**	>0.2500

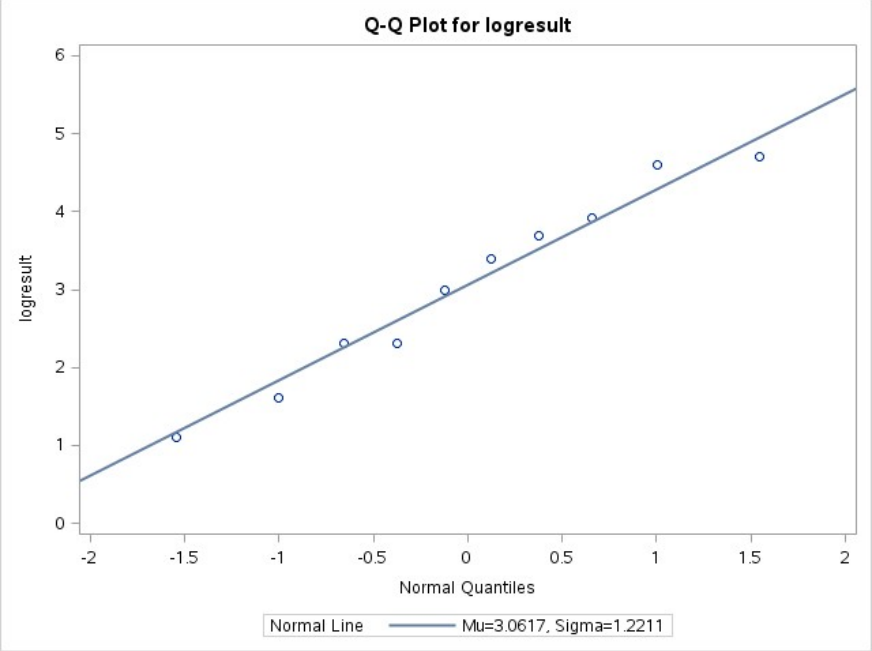
Quantiles (Definition 5)	
Level	**Quantile**
100% Max	4.70048
99%	4.70048
95%	4.70048
90%	4.65283
75% Q3	3.91202
50% Median	3.19846
25% Q1	2.30259
10%	1.35403
5%	1.09861
1%	1.09861
0% Min	1.09861

Extreme Observations			
Lowest		**Highest**	
Value	**Obs**	**Value**	**Obs**
1.09861	29	3.40120	25
1.60944	23	3.68888	20
2.30259	28	3.91202	26
2.30259	22	4.60517	17
2.99573	21	4.70048	18

Missing Values			
Missing Value	**Count**	**Percent Of**	
		All Obs	**Missing Obs**
.	4	28.57	100.00

The UNIVARIATE Procedure

decision_result=1



The TTEST Procedure

Variable: logresult

school	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
SMU		12	4.2128	1.3934	0.4022	2.3026	7.0901
SEA		10	3.0617	1.2211	0.3861	1.0986	4.7005
Diff (1-2)	Pooled		1.1511	1.3186	0.5646		
Diff (1-2)	Satterthwaite		1.1511		0.5576		

school	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
SMU		4.2128	3.3275	5.0981	1.3934	0.9871	2.3658
SEA		3.0617	2.1882	3.9352	1.2211	0.8399	2.2292
Diff (1-2)	Pooled	1.1511	-0.0266	2.3289	1.3186	1.0088	1.9042
Diff (1-2)	Satterthwaite	1.1511	-0.0122	2.3145			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	20	2.04	0.0549
Satterthwaite	Unequal	19.93	2.06	0.0522

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	11	9	1.30	0.7030