

UCL Statistics for Uncensored Full Data Sets

User Selected Options
Date/Time of Computation ProUCL 5.125/02/2019 17:31:35
From File Sogglacenza.xls
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

UCL Sogglacenza (m)

General Statistics

Total Number of Observations	95,00	Number of Distinct Observations	86,00
		Number of Missing Observations	0
Minimum	21,65	Mean	28,76
Maximum	32,71	Median	29,65
SD	2,571	Std. Error of Mean	0,264
Coefficient of Variation	0,0894	Skewness	-1,268

Normal GOF Test

Shapiro Wilk Test Statistic	0,856	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	2,727E-13	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0,146	Lilliefors GOF Test
5% Lilliefors Critical Value	0,0911	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	29,20	95% Adjusted-CLT UCL (Chen-1995)	29,16
		95% Modified-t UCL (Johnson-1978)	29,20

Gamma GOF Test

A-D Test Statistic	4,341	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0,750	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0,152	Kolmogorov-Smirnov Gamma GOF Test
5% K-S Critical Value	0,0915	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	115,7	k star (bias corrected MLE)	112,0
Theta hat (MLE)	0,249	Theta star (bias corrected MLE)	0,257
nu hat (MLE)	21979	nu star (bias corrected)	21286
MLE Mean (bias corrected)	28,76	MLE Sd (bias corrected)	2,718
		Approximate Chi Square Value (0,0500)	20948
Adjusted Level of Significance	0,0475	Adjusted Chi Square Value	20943

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	29,23	95% Adjusted Gamma UCL (use when n<50)	29,24
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Lognormal GOF Test

Shapiro Wilk Test Statistic	0,818	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0,153	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0,0911	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	3,075	Mean of logged Data	3,355
Maximum of Logged Data	3,488	SD of logged Data	0,0958

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	29,62
95% Chebyshev (MVUE) UCL	30,01	97,5% Chebyshev (MVUE) UCL	30,54
99% Chebyshev (MVUE) UCL	31,59		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	29,20	95% Jackknife UCL	29,20
95% Standard Bootstrap UCL	29,20	95% Bootstrap-t UCL	29,18
95% Hall's Bootstrap UCL	29,18	95% Percentile Bootstrap UCL	29,18
95% BCA Bootstrap UCL	29,14		
90% Chebyshev(Mean, Sd) UCL	29,56	95% Chebyshev(Mean, Sd) UCL	29,91
97,5% Chebyshev(Mean, Sd) UCL	30,41	99% Chebyshev(Mean, Sd) UCL	31,39

Suggested UCL to Use

95% Student's-t UCL	29,20	or 95% Modified-t UCL	29,20
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.

LCL Soggiacenza

General Statistics			
Total Number of Observations	95,00	Number of Distinct Observations	86,00
		Number of Missing Observations	0
Minimum	-32,71	Mean	-28,76
Maximum	-21,65	Median	-29,65
SD	2,571	Std. Error of Mean	0,264
Coefficient of Variation	-0,0894	Skewness	1,268
Normal GOF Test			
Shapiro Wilk Test Statistic	0,856	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	2,727E-13	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0,146	Lilliefors GOF Test	
5% Lilliefors Critical Value	0,0911	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	-28,33	95% Adjusted-CLT UCL (Chen-1995)	-28,29
		95% Modified-t UCL (Johnson-1978)	-28,32
Gamma Statistics Not Available			
Lognormal Statistics Not Available			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	-28,33	95% Jackknife UCL	-28,33
95% Standard Bootstrap UCL	-28,34	95% Bootstrap-t UCL	-28,29
95% Hall's Bootstrap UCL	-28,28	95% Percentile Bootstrap UCL	-28,31
95% BCA Bootstrap UCL	-28,25		
90% Chebyshev(Mean, Sd) UCL	-27,97	95% Chebyshev(Mean, Sd) UCL	-27,61
97,5% Chebyshev(Mean, Sd) UCL	-27,12	99% Chebyshev(Mean, Sd) UCL	-26,14
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	-27,61		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.