

Data File			Variable: CSOAAs
Raw Statistics			Normal Distribution Test
Number of Valid Samples	21	Shapiro-Wilk Test Statistic	0.870246
Number of Unique Samples	21	Shapiro-Wilk 5% Critical Value	0.908
Minimum	114.2	Data not normal at 5% significance level	
Maximum	3579		
Mean	1108.695	95% UCL (Assuming Normal Distribution)	
Median	1052	Student's-t UCL	1401.943
Standard Deviation	779.1583		
Variance	607087.7	Gamma Distribution Test	
Coefficient of Variation	0.70277	A-D Test Statistic	0.338324
Skewness	1.568146	A-D 5% Critical Value	0.753314
Gamma Statistics			K-S Test Statistic
k hat	2.112902	K-S 5% Critical Value	0.113987
k star (bias corrected)	1.842805	Data follow gamma distribution	
Theta hat	524.7263	at 5% significance level	
Theta star	601.6346	95% UCLs (Assuming Gamma Distribution)	
nu hat	88.74188	Approximate Gamma UCL	1476.24
nu star	77.39781	Adjusted Gamma UCL	1509.556
Approx.Chi Square Value (.05)	58.12779		
Adjusted Level of Significance	0.0383	Lognormal Distribution Test	
Adjusted Chi Square Value	56.84493	Shapiro-Wilk Test Statistic	0.939152
Log-transformed Statistics			Shapiro-Wilk 5% Critical Value
Minimum of log data	4.737951	Data are lognormal at 5% significance level	
Maximum of log data	8.182839	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	6.756013	95% H-UCL	1783.326
Standard Deviation of log data	0.798389	95% Chebyshev (MVUE) UCL	2115.472
Variance of log data	0.637426	97.5% Chebyshev (MVUE) UCL	2529.247
		99% Chebyshev (MVUE) UCL	3342.026
RECOMMENDATION			95% Non-parametric UCLs
Data follow gamma distribution (0.05)		CLT UCL	1388.364
Use Approximate Gamma UCL		Adj-CLT UCL (Adjusted for skewness)	1450.533
		Mod-t UCL (Adjusted for skewness)	1411.64
		Jackknife UCL	1401.943
		Standard Bootstrap UCL	1382.607
		Bootstrap-t UCL	1497.057
		Hall's Bootstrap UCL	1644.245
		Percentile Bootstrap UCL	1394.41
		BCA Bootstrap UCL	1451.848
		95% Chebyshev (Mean, Sd) UCL	1849.823
		97.5% Chebyshev (Mean, Sd) UCL	2170.509
		99% Chebyshev (Mean, Sd) UCL	2800.435

Data File		Variable: CSOASb
Raw Statistics		Normal Distribution Test
Number of Valid Samples	21	Shapiro-Wilk Test Statisticic
Number of Unique Samples	21	Shapiro-Wilk 5% Critical Value
Minimum	0.3	Data not normal at 5% significance level
Maximum	84.68	
Mean	10.25429	95% UCL (Assuming Normal Distribution)
Median	3.26	Student's-t UCL
Standard Deviation	18.99765	
Variance	360.9105	Gamma Distribution Test
Coefficient of Variation	1.852654	A-D Test Statistic
Skewness	3.375019	A-D 5% Critical Value
Gamma Statistics		K-S Test Statistic
k hat	0.607091	K-S 5% Critical Value
k star (bias corrected)	0.552109	Data do not follow gamma distribution
Theta hat	16.89086	at 5% significance level
Theta star	18.57292	95% UCLs (Assuming Gamma Distribution)
nu hat	25.49781	Approximate Gamma UCL
nu star	23.1886	Adjusted Gamma UCL
Approx.Chi Square Value (.05)	13.23163	
Adjusted Level of Significance	0.0383	Lognormal Distribution Test
Adjusted Chi Square Value	12.65455	Shapiro-Wilk Test Statisticic
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value
Minimum of log data	-1.203973	Data are lognormal at 5% significance level
Maximum of log data	4.438879	
Mean of log data	1.311689	95% UCLs (Assuming Lognormal Distribution)
Standard Deviation of log data	1.449005	95% H-UCL
Variance of log data	2.099615	95% Chebyshev (MVUE) UCL
		97.5% Chebyshev (MVUE) UCL
		99% Chebyshev (MVUE) UCL
RECOMMENDATION		95% Non-parametric UCLs
Data are lognormal (0.05)		CLT UCL
Use 95% Chebyshev (MVUE) UCL		Adj-CLT UCL (Adjusted for skewness)
		Mod-t UCL (Adjusted for skewness)
		Jackknife UCL
		Standard Bootstrap UCL
		Bootstrap-t UCL
		Hall's Bootstrap UCL
		Percentile Bootstrap UCL
		BCA Bootstrap UCL
		95% Chebyshev (Mean, Sd) UCL
		97.5% Chebyshev (Mean, Sd) UCL
		99% Chebyshev (Mean, Sd) UCL

Data File		Variable: CSOACd
Raw Statistics		Normal Distribution Test
Number of Valid Samples	21	Shapiro-Wilk Test Statisticic
Number of Unique Samples	21	Shapiro-Wilk 5% Critical Value
Minimum	9.53	Data not normal at 5% significance level
Maximum	144.6	
Mean	55.12143	95% UCL (Assuming Normal Distribution)
Median	50.68	Student's-t UCL
Standard Deviation	39.95974	
Variance	1596.781	Gamma Distribution Test
Coefficient of Variation	0.72494	A-D Test Statistic
Skewness	0.878614	A-D 5% Critical Value
Gamma Statistics		K-S Test Statistic
k hat	1.883674	K-S 5% Critical Value
k star (bias corrected)	1.646324	Data follow gamma distribution
Theta hat	29.26273	at 5% significance level
Theta star	33.48153	95% UCLs (Assuming Gamma Distribution)
nu hat	79.1143	Approximate Gamma UCL
nu star	69.14559	Adjusted Gamma UCL
Approx.Chi Square Value (.05)	51.00099	
Adjusted Level of Significance	0.0383	Lognormal Distribution Test
Adjusted Chi Square Value	49.80382	Shapiro-Wilk Test Statisticic
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value
Minimum of log data	2.254445	Data are lognormal at 5% significance level
Maximum of log data	4.973971	
Mean of log data	3.721205	95% UCLs (Assuming Lognormal Distribution)
Standard Deviation of log data	0.828984	95% H-UCL
Variance of log data	0.687214	95% Chebyshev (MVUE) UCL
		97.5% Chebyshev (MVUE) UCL
		99% Chebyshev (MVUE) UCL
RECOMMENDATION		95% Non-parametric UCLs
Data follow gamma distribution (0.05)		CLT UCL
Use Approximate Gamma UCL		Adj-CLT UCL (Adjusted for skewness)
		Mod-t UCL (Adjusted for skewness)
		Jackknife UCL
		Standard Bootstrap UCL
		Bootstrap-t UCL
		Hall's Bootstrap UCL
		Percentile Bootstrap UCL
		BCA Bootstrap UCL
		95% Chebyshev (Mean, Sd) UCL
		97.5% Chebyshev (Mean, Sd) UCL
		99% Chebyshev (Mean, Sd) UCL

Data File	Variable:	CSOACu
Raw Statistics		Normal Distribution Test
Number of Valid Samples	21	Shapiro-Wilk Test Statistic
Number of Unique Samples	21	Shapiro-Wilk 5% Critical Value
Minimum	155.7	Data are normal at 5% significance level
Maximum	2149	
Mean	1005.429	95% UCL (Assuming Normal Distribution)
Median	995.5	Student's-t UCL
Standard Deviation	537.677	
Variance	289096.6	Gamma Distribution Test
Coefficient of Variation	0.534774	A-D Test Statistic
Skewness	0.261941	A-D 5% Critical Value
Gamma Statistics		K-S Test Statistic
k hat	2.887522	K-S 5% Critical Value
k star (bias corrected)	2.506765	Data follow gamma distribution
Theta hat	348.1977	at 5% significance level
Theta star	401.0861	95% UCLs (Assuming Gamma Distribution)
nu hat	121.2759	Approximate Gamma UCL
nu star	105.2841	Adjusted Gamma UCL
Approx.Chi Square Value (.05)	82.60117	
Adjusted Level of Significance	0.0383	Lognormal Distribution Test
Adjusted Chi Square Value	81.05817	Shapiro-Wilk Test Statistic
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value
Minimum of log data	5.047931	Data not lognormal at 5% significance level
Maximum of log data	7.672758	95% UCLs (Assuming Lognormal Distribution)
Mean of log data	6.730129	95% H-UCL
Standard Deviation of log data	0.689975	95% Chebyshev (MVUE) UCL
Variance of log data	0.476066	97.5% Chebyshev (MVUE) UCL
		99% Chebyshev (MVUE) UCL
RECOMMENDATION		95% Non-parametric UCLs
Data are normal (0.05)		CLT UCL
Use Student's-t UCL		Adj-CLT UCL (Adjusted for skewness)
		Mod-t UCL (Adjusted for skewness)
		Jackknife UCL
		Standard Bootstrap UCL
		Bootstrap-t UCL
		Hall's Bootstrap UCL
		Percentile Bootstrap UCL
		BCA Bootstrap UCL
		95% Chebyshev (Mean, Sd) UCL
		97.5% Chebyshev (Mean, Sd) UCL
		99% Chebyshev (Mean, Sd) UCL

Data File		Variable: CSOAPb
	Raw Statistics	Normal Distribution Test
Number of Valid Samples	21	Shapiro-Wilk Test Statistic 0.962643
Number of Unique Samples	21	Shapiro-Wilk 5% Critical Value 0.908
Minimum	418.3	Data are normal at 5% significance level
Maximum	4942	
Mean	2406.886	95% UCL (Assuming Normal Distribution)
Median	2215.5	Student's-t UCL 2869.318
Standard Deviation	1228.682	
Variance	1509661	Gamma Distribution Test
Coefficient of Variation	0.510486	A-D Test Statistic 0.342693
Skewness	0.354102	A-D 5% Critical Value 0.748734
		K-S Test Statistic 0.110168
		K-S 5% Critical Value 0.190726
	Gamma Statistics	
k hat	3.323719	Data follow gamma distribution
k star (bias corrected)	2.880648	at 5% significance level
Theta hat	724.1545	
Theta star	835.5363	95% UCLs (Assuming Gamma Distribution)
nu hat	139.5962	Approximate Gamma UCL 3015.071
nu star	120.9872	Adjusted Gamma UCL 3068.263
Approx.Chi Square Value (.05)	96.58227	
Adjusted Level of Significance	0.0383	Lognormal Distribution Test
Adjusted Chi Square Value	94.90789	Shapiro-Wilk Test Statistic 0.916513
		Shapiro-Wilk 5% Critical Value 0.908
		Data are lognormal at 5% significance level
	Log-transformed Statistics	
Minimum of log data	6.036199	
Maximum of log data	8.505525	95% UCLs (Assuming Lognormal Distribution)
Mean of log data	7.628177	95% H-UCL 3384.938
Standard Deviation of log data	0.631929	95% Chebyshev (MVUE) UCL 4059.603
Variance of log data	0.399334	97.5% Chebyshev (MVUE) UCL 4742.334
		99% Chebyshev (MVUE) UCL 6083.426
		95% Non-parametric UCLs
	CLT UCL	2847.905
	Adj-CLT UCL (Adjusted for skewness)	2870.042
	Mod-t UCL (Adjusted for skewness)	2872.771
	Jackknife UCL	2869.318
	Standard Bootstrap UCL	2830.008
	Bootstrap-t UCL	2880.503
	Hall's Bootstrap UCL	2879.554
	Percentile Bootstrap UCL	2831.395
	BCA Bootstrap UCL	2853.552
	95% Chebyshev (Mean, Sd) UCL	3575.596
	97.5% Chebyshev (Mean, Sd) UCL	4081.298
	99% Chebyshev (Mean, Sd) UCL	5074.651
RECOMMENDATION		
Data are normal (0.05)		
Use Student's-t UCL		

Data File		Variable: CSOASe
Raw Statistics		Normal Distribution Test
Number of Valid Samples	21	Shapiro-Wilk Test Statisticic
Number of Unique Samples	21	Shapiro-Wilk 5% Critical Value
Minimum	0.74	Data not normal at 5% significance level
Maximum	17.155	
Mean	6.850714	95% UCL (Assuming Normal Distribution)
Median	5.3	Student's-t UCL
Standard Deviation	5.263198	
Variance	27.70126	Gamma Distribution Test
Coefficient of Variation	0.76827	A-D Test Statistic
Skewness	0.46966	A-D 5% Critical Value
Gamma Statistics		K-S Test Statistic
k hat	1.442619	K-S 5% Critical Value
k star (bias corrected)	1.268277	Data follow gamma distribution
Theta hat	4.748802	at 5% significance level
Theta star	5.401592	95% UCLs (Assuming Gamma Distribution)
nu hat	60.59002	Approximate Gamma UCL
nu star	53.26763	Adjusted Gamma UCL
Approx.Chi Square Value (.05)	37.49777	
Adjusted Level of Significance	0.0383	Lognormal Distribution Test
Adjusted Chi Square Value	36.48118	Shapiro-Wilk Test Statisticic
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value
Minimum of log data	-0.301105	Data are lognormal at 5% significance level
Maximum of log data	2.84229	
Mean of log data	1.539332	95% UCLs (Assuming Lognormal Distribution)
Standard Deviation of log data	0.987294	95% H-UCL
Variance of log data	0.974749	95% Chebyshev (MVUE) UCL
		97.5% Chebyshev (MVUE) UCL
		99% Chebyshev (MVUE) UCL
RECOMMENDATION		95% Non-parametric UCLs
Data follow gamma distribution (0.05)		CLT UCL
Use Approximate Gamma UCL		Adj-CLT UCL (Adjusted for skewness)
		Mod-t UCL (Adjusted for skewness)
		Jackknife UCL
		Standard Bootstrap UCL
		Bootstrap-t UCL
		Hall's Bootstrap UCL
		Percentile Bootstrap UCL
		BCA Bootstrap UCL
		95% Chebyshev (Mean, Sd) UCL
		97.5% Chebyshev (Mean, Sd) UCL
		99% Chebyshev (Mean, Sd) UCL

Data File	Variable:	CSOAAg
Raw Statistics		Normal Distribution Test
Number of Valid Samples	21	Shapiro-Wilk Test Statisticic
Number of Unique Samples	21	Shapiro-Wilk 5% Critical Value
Minimum	3.07	Data are normal at 5% significance level
Maximum	29.08	
Mean	16.31548	95% UCL (Assuming Normal Distribution)
Median	19.3	Student's-t UCL
Standard Deviation	7.671943	
Variance	58.85871	Gamma Distribution Test
Coefficient of Variation	0.470225	A-D Test Statistic
Skewness	-0.214869	A-D 5% Critical Value
Gamma Statistics		K-S Test Statistic
k hat	3.400132	K-S 5% Critical Value
k star (bias corrected)	2.946144	Data follow approximate gamma distibution
Theta hat	4.798484	at 5% significance level
Theta star	5.537908	95% UCLs (Assuming Gamma Distribution)
nu hat	142.8055	Approximate Gamma UCL
nu star	123.7381	Adjusted Gamma UCL
Approx.Chi Square Value (.05)	99.04328	
Adjusted Level of Significance	0.0383	Lognormal Distribution Test
Adjusted Chi Square Value	97.34679	Shapiro-Wilk Test Statisticic
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value
Minimum of log data	1.121678	Data not lognormal at 5% significance level
Maximum of log data	3.370051	95% UCLs (Assuming Lognormal Distribution)
Mean of log data	2.637913	95% H-UCL
Standard Deviation of log data	0.640314	95% Chebyshev (MVUE) UCL
Variance of log data	0.410002	97.5% Chebyshev (MVUE) UCL
		99% Chebyshev (MVUE) UCL
RECOMMENDATION		95% Non-parametric UCLs
Data are normal (0.05)		CLT UCL
Use Student's-t UCL		Adj-CLT UCL (Adjusted for skewness)
		Mod-t UCL (Adjusted for skewness)
		Jackknife UCL
		Standard Bootstrap UCL
		Bootstrap-t UCL
		Hall's Bootstrap UCL
		Percentile Bootstrap UCL
		BCA Bootstrap UCL
		95% Chebyshev (Mean, Sd) UCL
		97.5% Chebyshev (Mean, Sd) UCL
		99% Chebyshev (Mean, Sd) UCL

Data File	Variable: CSOATI
Raw Statistics	Normal Distribution Test
Number of Valid Samples	Shapiro-Wilk Test Statistic 0.974842
Number of Unique Samples	Shapiro-Wilk 5% Critical Value 0.908
Minimum	Data are normal at 5% significance level
Maximum	95% UCL (Assuming Normal Distribution)
Mean	Student's-t UCL 4.313225
Median	
Standard Deviation	
Variance	Gamma Distribution Test
Coefficient of Variation	A-D Test Statistic 0.276007
Skewness	A-D 5% Critical Value 0.748484
	K-S Test Statistic 0.140635
Gamma Statistics	K-S 5% Critical Value 0.190649
k hat	Data follow gamma distribution
k star (bias corrected)	at 5% significance level
Theta hat	
Theta star	95% UCLs (Assuming Gamma Distribution)
nu hat	Approximate Gamma UCL 4.537013
nu star	Adjusted Gamma UCL 4.615569
Approx.Chi Square Value (.05)	
Adjusted Level of Significance	Lognormal Distribution Test
Adjusted Chi Square Value	Shapiro-Wilk Test Statistic 0.918893
	Shapiro-Wilk 5% Critical Value 0.908
Log-transformed Statistics	Data are lognormal at 5% significance level
Minimum of log data	
Maximum of log data	95% UCLs (Assuming Lognormal Distribution)
Mean of log data	95% H-UCL 5.10082
Standard Deviation of log data	95% Chebyshev (MVUE) UCL 6.116803
Variance of log data	97.5% Chebyshev (MVUE) UCL 7.13821
	99% Chebyshev (MVUE) UCL 9.144566
RECOMMENDATION	95% Non-parametric UCLs
Data are normal (0.05)	CLT UCL 4.281897
	Adj-CLT UCL (Adjusted for skewness) 4.305529
	Mod-t UCL (Adjusted for skewness) 4.316911
	Jackknife UCL 4.313225
	Standard Bootstrap UCL 4.265145
	Bootstrap-t UCL 4.322257
	Hall's Bootstrap UCL 4.342531
	Percentile Bootstrap UCL 4.288571
	BCA Bootstrap UCL 4.281905
	95% Chebyshev (Mean, Sd) UCL 5.346541
	97.5% Chebyshev (Mean, Sd) UCL 6.086404
	99% Chebyshev (Mean, Sd) UCL 7.539724
Use Student's-t UCL	

Data File	Variable:	CSOAZn
Raw Statistics		Normal Distribution Test
Number of Valid Samples	21	Shapiro-Wilk Test Statistic
Number of Unique Samples	21	Shapiro-Wilk 5% Critical Value
Minimum	816.8	Data are normal at 5% significance level
Maximum	5286	
Mean	2491.348	95% UCL (Assuming Normal Distribution)
Median	2465	Student's-t UCL
Standard Deviation	1106.471	
Variance	1224279	Gamma Distribution Test
Coefficient of Variation	0.444126	A-D Test Statistic
Skewness	0.828102	A-D 5% Critical Value
Gamma Statistics		K-S Test Statistic
k hat	5.291108	K-S 5% Critical Value
k star (bias corrected)	4.566981	Data follow gamma distribution
Theta hat	470.8556	at 5% significance level
Theta star	545.513	95% UCLs (Assuming Gamma Distribution)
nu hat	222.2265	Approximate Gamma UCL
nu star	191.8132	Adjusted Gamma UCL
Approx.Chi Square Value (.05)	160.7667	
Adjusted Level of Significance	0.0383	Lognormal Distribution Test
Adjusted Chi Square Value	158.5851	Shapiro-Wilk Test Statistic
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value
Minimum of log data	6.705394	Data are lognormal at 5% significance level
Maximum of log data	8.572817	
Mean of log data	7.723115	95% UCLs (Assuming Lognormal Distribution)
Standard Deviation of log data	0.465614	95% H-UCL
Variance of log data	0.216797	95% Chebyshev (MVUE) UCL
RECOMMENDATION		97.5% Chebyshev (MVUE) UCL
Data are normal (0.05)		99% Chebyshev (MVUE) UCL
Use Student's-t UCL		95% Non-parametric UCLs
		CLT UCL
		Adj-CLT UCL (Adjusted for skewness)
		Mod-t UCL (Adjusted for skewness)
		Jackknife UCL
		Standard Bootstrap UCL
		Bootstrap-t UCL
		Hall's Bootstrap UCL
		Percentile Bootstrap UCL
		BCA Bootstrap UCL
		95% Chebyshev (Mean, Sd) UCL
		97.5% Chebyshev (Mean, Sd) UCL
		99% Chebyshev (Mean, Sd) UCL

Data File	Variable:	CSOAHg
Raw Statistics		Normal Distribution Test
Number of Valid Samples	21	Shapiro-Wilk Test Statistic
Number of Unique Samples	21	Shapiro-Wilk 5% Critical Value
Minimum	0.098	Data not normal at 5% significance level
Maximum	1	
Mean	0.439619	95% UCL (Assuming Normal Distribution)
Median	0.335	Student's-t UCL
Standard Deviation	0.267073	
Variance	0.071328	Gamma Distribution Test
Coefficient of Variation	0.607511	A-D Test Statistic
Skewness	0.796283	A-D 5% Critical Value
Gamma Statistics		K-S Test Statistic
k hat	2.848722	K-S 5% Critical Value
k star (bias corrected)	2.473508	Data follow gamma distribution
Theta hat	0.154322	at 5% significance level
Theta star	0.177731	95% UCLs (Assuming Gamma Distribution)
nu hat	119.6463	Approximate Gamma UCL
nu star	103.8873	Adjusted Gamma UCL
Approx.Chi Square Value (.05)	81.36361	
Adjusted Level of Significance	0.0383	Lognormal Distribution Test
Adjusted Chi Square Value	79.83275	Shapiro-Wilk Test Statistic
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value
Minimum of log data	-2.322788	Data are lognormal at 5% significance level
Maximum of log data	0	95% UCLs (Assuming Lognormal Distribution)
Mean of log data	-1.007513	95% H-UCL
Standard Deviation of log data	0.643079	95% Chebyshev (MVUE) UCL
Variance of log data	0.413551	97.5% Chebyshev (MVUE) UCL
		99% Chebyshev (MVUE) UCL
RECOMMENDATION		95% Non-parametric UCLs
Data follow gamma distribution (0.05)		CLT UCL
Use Approximate Gamma UCL		Adj-CLT UCL (Adjusted for skewness)
		Mod-t UCL (Adjusted for skewness)
		Jackknife UCL
		Standard Bootstrap UCL
		Bootstrap-t UCL
		Hall's Bootstrap UCL
		Percentile Bootstrap UCL
		BCA Bootstrap UCL
		95% Chebyshev (Mean, Sd) UCL
		97.5% Chebyshev (Mean, Sd) UCL
		99% Chebyshev (Mean, Sd) UCL

Data File		Variable: CSONAs
Raw Statistics		Normal Distribution Test
Number of Valid Samples	7	Shapiro-Wilk Test Statisticic
Number of Unique Samples	7	Shapiro-Wilk 5% Critical Value
Minimum	156.2	Data are normal at 5% significance level
Maximum	711	
Mean	385.6429	95% UCL (Assuming Normal Distribution)
Median	397.4	Student's-t UCL
Standard Deviation	218.9717	
Variance	47948.61	Gamma Distribution Test
Coefficient of Variation	0.56781	A-D Test Statistic
Skewness	0.460231	A-D 5% Critical Value
Gamma Statistics		K-S Test Statistic
k hat	3.463884	K-S 5% Critical Value
k star (bias corrected)	2.074601	Data follow gamma distribution
Theta hat	111.3325	at 5% significance level
Theta star	185.8878	95% UCLs (Assuming Gamma Distribution)
nu hat	48.49438	Approximate Gamma UCL
nu star	29.04441	Adjusted Gamma UCL
Approx.Chi Square Value (.05)	17.74131	
Adjusted Level of Significance	0.01584	Lognormal Distribution Test
Adjusted Chi Square Value	15.13745	Shapiro-Wilk Test Statisticic
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value
Minimum of log data	5.051137	Data are lognormal at 5% significance level
Maximum of log data	6.566672	
Mean of log data	5.803676	95% UCLs (Assuming Lognormal Distribution)
Standard Deviation of log data	0.607225	95% H-UCL
Variance of log data	0.368722	95% Chebyshev (MVUE) UCL
		97.5% Chebyshev (MVUE) UCL
		99% Chebyshev (MVUE) UCL
RECOMMENDATION		95% Non-parametric UCLs
Data are normal (0.05)		CLT UCL
Use Student's-t UCL		Adj-CLT UCL (Adjusted for skewness)
		Mod-t UCL (Adjusted for skewness)
		Jackknife UCL
		Standard Bootstrap UCL
		Bootstrap-t UCL
		Hall's Bootstrap UCL
		Percentile Bootstrap UCL
		BCA Bootstrap UCL
		95% Chebyshev (Mean, Sd) UCL
		97.5% Chebyshev (Mean, Sd) UCL
		99% Chebyshev (Mean, Sd) UCL

Data File		Variable: CSOASb
Raw Statistics		Normal Distribution Test
Number of Valid Samples	21	Shapiro-Wilk Test Statisticic
Number of Unique Samples	21	Shapiro-Wilk 5% Critical Value
Minimum	0.3	Data not normal at 5% significance level
Maximum	84.68	
Mean	10.25429	95% UCL (Assuming Normal Distribution)
Median	3.26	Student's-t UCL
Standard Deviation	18.99765	
Variance	360.9105	Gamma Distribution Test
Coefficient of Variation	1.852654	A-D Test Statistic
Skewness	3.375019	A-D 5% Critical Value
Gamma Statistics		K-S Test Statistic
k hat	0.607091	K-S 5% Critical Value
k star (bias corrected)	0.552109	Data do not follow gamma distribution
Theta hat	16.89086	at 5% significance level
Theta star	18.57292	95% UCLs (Assuming Gamma Distribution)
nu hat	25.49781	Approximate Gamma UCL
nu star	23.1886	Adjusted Gamma UCL
Approx.Chi Square Value (.05)	13.23163	
Adjusted Level of Significance	0.0383	Lognormal Distribution Test
Adjusted Chi Square Value	12.65455	Shapiro-Wilk Test Statisticic
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value
Minimum of log data	-1.203973	Data are lognormal at 5% significance level
Maximum of log data	4.438879	
Mean of log data	1.311689	95% UCLs (Assuming Lognormal Distribution)
Standard Deviation of log data	1.449005	95% H-UCL
Variance of log data	2.099615	95% Chebyshev (MVUE) UCL
		97.5% Chebyshev (MVUE) UCL
		99% Chebyshev (MVUE) UCL
RECOMMENDATION		95% Non-parametric UCLs
Data are lognormal (0.05)		CLT UCL
Use 95% Chebyshev (MVUE) UCL		Adj-CLT UCL (Adjusted for skewness)
		Mod-t UCL (Adjusted for skewness)
		Jackknife UCL
		Standard Bootstrap UCL
		Bootstrap-t UCL
		Hall's Bootstrap UCL
		Percentile Bootstrap UCL
		BCA Bootstrap UCL
		95% Chebyshev (Mean, Sd) UCL
		97.5% Chebyshev (Mean, Sd) UCL
		99% Chebyshev (Mean, Sd) UCL

Data File	Variable: CSONCd
Raw Statistics	Normal Distribution Test
Number of Valid Samples	Shapiro-Wilk Test Statistic
Number of Unique Samples	Shapiro-Wilk 5% Critical Value
Minimum	Data are normal at 5% significance level
Maximum	95% UCL (Assuming Normal Distribution)
Mean	Student's-t UCL
Median	20.11706
Standard Deviation	Gamma Distribution Test
Variance	A-D Test Statistic
Coefficient of Variation	0.485407
Skewness	A-D 5% Critical Value
	0.708884
Gamma Statistics	K-S Test Statistic
k hat	0.292694
k star (bias corrected)	K-S 5% Critical Value
Theta hat	0.312246
Theta star	Data follow gamma distribution
nu hat	at 5% significance level
nu star	95% UCLs (Assuming Gamma Distribution)
Approx.Chi Square Value (.05)	Approximate Gamma UCL
Adjusted Level of Significance	21.10889
Adjusted Chi Square Value	Adjusted Gamma UCL
	23.22892
Log-transformed Statistics	Lognormal Distribution Test
Minimum of log data	Shapiro-Wilk Test Statistic
Maximum of log data	0.892963
Mean of log data	Shapiro-Wilk 5% Critical Value
Standard Deviation of log data	0.803
Variance of log data	Data are lognormal at 5% significance level
	95% UCLs (Assuming Lognormal Distribution)
RECOMMENDATION	95% H-UCL
Data are normal (0.05)	21.79632
	95% Chebyshev (MVUE) UCL
Use Student's-t UCL	24.84578
	97.5% Chebyshev (MVUE) UCL
	28.87655
	99% Chebyshev (MVUE) UCL
	36.79423
	95% Non-parametric UCLs
	CLT UCL
	19.42161
	Adj-CLT UCL (Adjusted for skewness)
	20.59515
	Mod-t UCL (Adjusted for skewness)
	20.30011
	Jackknife UCL
	20.11706
	Standard Bootstrap UCL
	19.20779
	Bootstrap-t UCL
	23.24513
	Hall's Bootstrap UCL
	19.91452
	Percentile Bootstrap UCL
	19.16
	BCA Bootstrap UCL
	20.41714
	95% Chebyshev (Mean, Sd) UCL
	25.74856
	97.5% Chebyshev (Mean, Sd) UCL
	30.14542
	99% Chebyshev (Mean, Sd) UCL
	38.78219

Data File	Variable:	CSONCu
Raw Statistics		Normal Distribution Test
Number of Valid Samples	7	Shapiro-Wilk Test Statistic
Number of Unique Samples	7	Shapiro-Wilk 5% Critical Value
Minimum	108.7	Data are normal at 5% significance level
Maximum	845.1	
Mean	385.0714	95% UCL (Assuming Normal Distribution)
Median	292.1	Student's-t UCL
Standard Deviation	277.8119	
Variance	77179.44	Gamma Distribution Test
Coefficient of Variation	0.721455	A-D Test Statistic
Skewness	0.81538	A-D 5% Critical Value
Gamma Statistics		K-S Test Statistic
k hat	2.178703	K-S 5% Critical Value
k star (bias corrected)	1.340211	Data follow gamma distribution
Theta hat	176.7434	at 5% significance level
Theta star	287.3214	95% UCLs (Assuming Gamma Distribution)
nu hat	30.50184	Approximate Gamma UCL
nu star	18.76296	Adjusted Gamma UCL
Approx.Chi Square Value (.05)	9.943066	
Adjusted Level of Significance	0.01584	Lognormal Distribution Test
Adjusted Chi Square Value	8.079195	Shapiro-Wilk Test Statistic
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value
Minimum of log data	4.688592	Data are lognormal at 5% significance level
Maximum of log data	6.739455	95% UCLs (Assuming Lognormal Distribution)
Mean of log data	5.706718	95% H-UCL
Standard Deviation of log data	0.784598	95% Chebyshev (MVUE) UCL
Variance of log data	0.615594	97.5% Chebyshev (MVUE) UCL
		99% Chebyshev (MVUE) UCL
RECOMMENDATION		95% Non-parametric UCLs
Data are normal (0.05)		CLT UCL
Use Student's-t UCL		Adj-CLT UCL (Adjusted for skewness)
		Mod-t UCL (Adjusted for skewness)
		Jackknife UCL
		Standard Bootstrap UCL
		Bootstrap-t UCL
		Hall's Bootstrap UCL
		Percentile Bootstrap UCL
		BCA Bootstrap UCL
		95% Chebyshev (Mean, Sd) UCL
		97.5% Chebyshev (Mean, Sd) UCL
		99% Chebyshev (Mean, Sd) UCL

Data File		Variable: CSONPb
	Raw Statistics	Normal Distribution Test
Number of Valid Samples	7	Shapiro-Wilk Test Statistic 0.907317
Number of Unique Samples	7	Shapiro-Wilk 5% Critical Value 0.803
Minimum	292.5	Data are normal at 5% significance level
Maximum	2357	
Mean	1038.5	95% UCL (Assuming Normal Distribution)
Median	844	Student's-t UCL 1592.296
Standard Deviation	754.0254	
Variance	568554.2	Gamma Distribution Test
Coefficient of Variation	0.726072	A-D Test Statistic 0.212788
Skewness	0.960743	A-D 5% Critical Value 0.714335
		K-S Test Statistic 0.163031
		K-S 5% Critical Value 0.314819
	Gamma Statistics	
k hat	2.209429	Data follow gamma distribution
k star (bias corrected)	1.357769	at 5% significance level
Theta hat	470.031	
Theta star	764.8577	95% UCLs (Assuming Gamma Distribution)
nu hat	30.932	Approximate Gamma UCL 1950.201
nu star	19.00876	Adjusted Gamma UCL 2396.054
Approx.Chi Square Value (.05)	10.12234	
Adjusted Level of Significance	0.01584	Lognormal Distribution Test
Adjusted Chi Square Value	8.238797	Shapiro-Wilk Test Statistic 0.956102
		Shapiro-Wilk 5% Critical Value 0.803
		Data are lognormal at 5% significance level
	Log-transformed Statistics	
Minimum of log data	5.678465	95% UCLs (Assuming Lognormal Distribution)
Maximum of log data	7.765145	95% H-UCL 2934.168
Mean of log data	6.70248	95% Chebyshev (MVUE) UCL 2393.255
Standard Deviation of log data	0.776269	97.5% Chebyshev (MVUE) UCL 2976.123
Variance of log data	0.602594	99% Chebyshev (MVUE) UCL 4121.056
		95% Non-parametric UCLs
		CLT UCL 1507.275
		Adj-CLT UCL (Adjusted for skewness) 1617.854
		Mod-t UCL (Adjusted for skewness) 1609.544
		Jackknife UCL 1592.296
		Standard Bootstrap UCL 1474.3
		Bootstrap-t UCL 1974.687
		Hall's Bootstrap UCL 4351.402
		Percentile Bootstrap UCL 1476.357
		BCA Bootstrap UCL 1542.886
		95% Chebyshev (Mean, Sd) UCL 2280.764
		97.5% Chebyshev (Mean, Sd) UCL 2818.292
		99% Chebyshev (Mean, Sd) UCL 3874.162
	RECOMMENDATION	
Data are normal (0.05)		
Use Student's-t UCL		

Data File		Variable: CSONSe
Raw Statistics		
Number of Valid Samples	7	Shapiro-Wilk Test Statistic
Number of Unique Samples	7	Shapiro-Wilk 5% Critical Value
Minimum	0.09	Data not normal at 5% significance level
Maximum	3.78	
Mean	1.225714	95% UCL (Assuming Normal Distribution)
Median	0.91	Student's-t UCL
Standard Deviation	1.202343	
Variance	1.445629	
Coefficient of Variation	0.980932	
Skewness	1.975847	
Gamma Statistics		
k hat	1.280087	Data follow gamma distribution
k star (bias corrected)	0.826716	at 5% significance level
Theta hat	0.957524	
Theta star	1.48263	95% UCLs (Assuming Gamma Distribution)
nu hat	17.92122	Approximate Gamma UCL
nu star	11.57403	Adjusted Gamma UCL
Approx.Chi Square Value (.05)	4.946836	
Adjusted Level of Significance	0.01584	
Adjusted Chi Square Value	3.723556	
Log-transformed Statistics		
Minimum of log data	-2.407946	
Maximum of log data	1.329724	95% UCLs (Assuming Lognormal Distribution)
Mean of log data	-0.235422	95% H-UCL
Standard Deviation of log data	1.140198	95% Chebyshev (MVUE) UCL
Variance of log data	1.300052	97.5% Chebyshev (MVUE) UCL
		99% Chebyshev (MVUE) UCL
RECOMMENDATION		
Data follow gamma distribution (0.05)		95% Non-parametric UCLs
Use Approximate Gamma UCL		CLT UCL
		Adj-CLT UCL (Adjusted for skewness)
		Mod-t UCL (Adjusted for skewness)
		Jackknife UCL
		Standard Bootstrap UCL
		Bootstrap-t UCL
		Hall's Bootstrap UCL
		Percentile Bootstrap UCL
		BCA Bootstrap UCL
		95% Chebyshev (Mean, Sd) UCL
		97.5% Chebyshev (Mean, Sd) UCL
		99% Chebyshev (Mean, Sd) UCL

Data File	Variable:	CSONAg
Raw Statistics		Normal Distribution Test
Number of Valid Samples	7	Shapiro-Wilk Test Statistic
Number of Unique Samples	7	Shapiro-Wilk 5% Critical Value
Minimum	1.85	Data not normal at 5% significance level
Maximum	36.47	
Mean	12.15286	95% UCL (Assuming Normal Distribution)
Median	4.47	Student's-t UCL
Standard Deviation	15.53671	
Variance	241.3892	Gamma Distribution Test
Coefficient of Variation	1.278441	A-D Test Statistic
Skewness	1.223251	A-D 5% Critical Value
Gamma Statistics		K-S Test Statistic
k hat	0.806711	K-S 5% Critical Value
k star (bias corrected)	0.556216	Data do not follow gamma distribution
Theta hat	15.0647	at 5% significance level
Theta star	21.84918	95% UCLs (Assuming Gamma Distribution)
nu hat	11.29395	Approximate Gamma UCL
nu star	7.78702	Adjusted Gamma UCL
Approx.Chi Square Value (.05)	2.611651	
Adjusted Level of Significance	0.01584	Lognormal Distribution Test
Adjusted Chi Square Value	1.798171	Shapiro-Wilk Test Statistic
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value
Minimum of log data	0.615186	Data are lognormal at 5% significance level
Maximum of log data	3.59649	
Mean of log data	1.762678	95% UCLs (Assuming Lognormal Distribution)
Standard Deviation of log data	1.274634	95% H-UCL
Variance of log data	1.624691	95% Chebyshev (MVUE) UCL
		97.5% Chebyshev (MVUE) UCL
		99% Chebyshev (MVUE) UCL
RECOMMENDATION		95% Non-parametric UCLs
Data are lognormal (0.05)		CLT UCL
Use 95% Chebyshev (MVUE) UCL		Adj-CLT UCL (Adjusted for skewness)
		Mod-t UCL (Adjusted for skewness)
		Jackknife UCL
		Standard Bootstrap UCL
		Bootstrap-t UCL
		Hall's Bootstrap UCL
		Percentile Bootstrap UCL
		BCA Bootstrap UCL
		95% Chebyshev (Mean, Sd) UCL
		97.5% Chebyshev (Mean, Sd) UCL
		99% Chebyshev (Mean, Sd) UCL

Data File		Variable: CSONTI
Raw Statistics		Normal Distribution Test
Number of Valid Samples	7	Shapiro-Wilk Test Statistic
Number of Unique Samples	7	Shapiro-Wilk 5% Critical Value
Minimum	0.69	Data are normal at 5% significance level
Maximum	2.23	
Mean	1.42	95% UCL (Assuming Normal Distribution)
Median	1.4	Student's-t UCL
Standard Deviation	0.641457	
Variance	0.411467	Gamma Distribution Test
Coefficient of Variation	0.45173	A-D Test Statistic
Skewness	0.057207	A-D 5% Critical Value
Gamma Statistics		K-S Test Statistic
k hat	5.258983	K-S 5% Critical Value
k star (bias corrected)	3.100371	Data follow gamma distribution
Theta hat	0.270014	at 5% significance level
Theta star	0.45801	95% UCLs (Assuming Gamma Distribution)
nu hat	73.62576	Approximate Gamma UCL
nu star	43.4052	Adjusted Gamma UCL
Approx.Chi Square Value (.05)	29.29536	
Adjusted Level of Significance	0.01584	Lognormal Distribution Test
Adjusted Chi Square Value	25.84638	Shapiro-Wilk Test Statistic
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value
Minimum of log data	-0.371064	Data are lognormal at 5% significance level
Maximum of log data	0.802002	95% UCLs (Assuming Lognormal Distribution)
Mean of log data	0.252579	95% H-UCL
Standard Deviation of log data	0.491123	95% Chebyshev (MVUE) UCL
Variance of log data	0.241202	97.5% Chebyshev (MVUE) UCL
		99% Chebyshev (MVUE) UCL
RECOMMENDATION		95% Non-parametric UCLs
Data are normal (0.05)		CLT UCL
Use Student's-t UCL		Adj-CLT UCL (Adjusted for skewness)
		Mod-t UCL (Adjusted for skewness)
		Jackknife UCL
		Standard Bootstrap UCL
		Bootstrap-t UCL
		Hall's Bootstrap UCL
		Percentile Bootstrap UCL
		BCA Bootstrap UCL
		95% Chebyshev (Mean, Sd) UCL
		97.5% Chebyshev (Mean, Sd) UCL
		99% Chebyshev (Mean, Sd) UCL

Data File		Variable: CSONZn
Raw Statistics		Normal Distribution Test
Number of Valid Samples	7	Shapiro-Wilk Test Statisticic
Number of Unique Samples	7	Shapiro-Wilk 5% Critical Value
Minimum	513.5	Data not normal at 5% significance level
Maximum	5837	
Mean	1753.114	95% UCL (Assuming Normal Distribution)
Median	1267	Student's-t UCL
Standard Deviation	1865.181	3123.002
Variance	3478901	
Coefficient of Variation	1.063924	Gamma Distribution Test
Skewness	2.288026	A-D Test Statistic
Gamma Statistics		A-D 5% Critical Value
k hat	1.605453	0.532119
k star (bias corrected)	1.01264	0.719903
Theta hat	1091.975	K-S Test Statistic
Theta star	1731.232	0.259351
nu hat	22.47634	K-S 5% Critical Value
nu star	14.17696	0.316609
Approx.Chi Square Value (.05)	6.691528	
Adjusted Level of Significance	0.01584	Data follow gamma distribution
Adjusted Chi Square Value	5.219679	at 5% significance level
Log-transformed Statistics		95% UCLs (Assuming Gamma Distribution)
Minimum of log data	6.24125	Approximate Gamma UCL
Maximum of log data	8.671972	3714.223
Mean of log data	7.126461	Adjusted Gamma UCL
Standard Deviation of log data	0.831118	4761.562
Variance of log data	0.690757	
RECOMMENDATION		Lognormal Distribution Test
Data follow gamma distribution (0.05)		Shapiro-Wilk Test Statisticic
Use Approximate Gamma UCL		0.912125
		Shapiro-Wilk 5% Critical Value
		0.803
		Data are lognormal at 5% significance level
95% Non-parametric UCLs		
		95% UCLs (Assuming Lognormal Distribution)
		95% H-UCL
		5270.122
		95% Chebyshev (MVUE) UCL
		3938.958
		97.5% Chebyshev (MVUE) UCL
		4926.671
		99% Chebyshev (MVUE) UCL
		6866.843
		CLT UCL
		2912.69
		Adj-CLT UCL (Adjusted for skewness)
		3564.115
		Mod-t UCL (Adjusted for skewness)
		3224.611
		Jackknife UCL
		3123.002
		Standard Bootstrap UCL
		2821.651
		Bootstrap-t UCL
		6724.842
		Hall's Bootstrap UCL
		8233.626
		Percentile Bootstrap UCL
		3068.957
		BCA Bootstrap UCL
		3667.229
		95% Chebyshev (Mean, Sd) UCL
		4826.017
		97.5% Chebyshev (Mean, Sd) UCL
		6155.665
		99% Chebyshev (Mean, Sd) UCL
		8767.499

Data File		Variable: CSONHg
Raw Statistics		Normal Distribution Test
Number of Valid Samples	7	Shapiro-Wilk Test Statisticic
Number of Unique Samples	7	Shapiro-Wilk 5% Critical Value
Minimum	0.099	Data are normal at 5% significance level
Maximum	0.265	
Mean	0.180857	95% UCL (Assuming Normal Distribution)
Median	0.183	Student's-t UCL
Standard Deviation	0.066344	
Variance	0.004401	Gamma Distribution Test
Coefficient of Variation	0.366829	A-D Test Statistic
Skewness	-0.13148	A-D 5% Critical Value
Gamma Statistics		K-S Test Statistic
k hat	7.861719	K-S 5% Critical Value
k star (bias corrected)	4.587649	Data follow gamma distribution
Theta hat	0.023005	at 5% significance level
Theta star	0.039423	95% UCLs (Assuming Gamma Distribution)
nu hat	110.0641	Approximate Gamma UCL
nu star	64.22708	Adjusted Gamma UCL
Approx.Chi Square Value (.05)	46.78564	
Adjusted Level of Significance	0.01584	Lognormal Distribution Test
Adjusted Chi Square Value	42.32752	Shapiro-Wilk Test Statisticic
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value
Minimum of log data	-2.312635	Data are lognormal at 5% significance level
Maximum of log data	-1.328025	
Mean of log data	-1.774993	95% UCLs (Assuming Lognormal Distribution)
Standard Deviation of log data	0.400988	95% H-UCL
Variance of log data	0.160792	95% Chebyshev (MVUE) UCL
		97.5% Chebyshev (MVUE) UCL
		99% Chebyshev (MVUE) UCL
RECOMMENDATION		95% Non-parametric UCLs
Data are normal (0.05)		CLT UCL
Use Student's-t UCL		Adj-CLT UCL (Adjusted for skewness)
		Mod-t UCL (Adjusted for skewness)
		Jackknife UCL
		Standard Bootstrap UCL
		Bootstrap-t UCL
		Hall's Bootstrap UCL
		Percentile Bootstrap UCL
		BCA Bootstrap UCL
		95% Chebyshev (Mean, Sd) UCL
		97.5% Chebyshev (Mean, Sd) UCL
		99% Chebyshev (Mean, Sd) UCL

Data File	Variable: CSMAAs		
Raw Statistics	Normal Distribution Test		
Number of Valid Samples	9	Shapiro-Wilk Test Statistic	0.941476
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.829
Minimum	85.99	Data are normal at 5% significance level	
Maximum	512.1		
Mean	261.6644	95% UCL (Assuming Normal Distribution)	
Median	272.6	Student's-t UCL	353.6932
Standard Deviation	148.4696		
Variance	22043.21		
Coefficient of Variation	0.567404	Gamma Distribution Test	
Skewness	0.363413	A-D Test Statistic	0.297919
Gamma Statistics		A-D 5% Critical Value	0.726626
k hat	3.094497	K-S Test Statistic	0.159133
k star (bias corrected)	2.137072	K-S 5% Critical Value	0.281254
Theta hat	84.558		
Theta star	122.4406	95% UCLs (Assuming Gamma Distribution)	
nu hat	55.70094	Approximate Gamma UCL	398.4686
nu star	38.46729	Adjusted Gamma UCL	437.116
Approx.Chi Square Value (.05)	25.26052		
Adjusted Level of Significance	0.02308	Lognormal Distribution Test	
Adjusted Chi Square Value	23.02712	Shapiro-Wilk Test Statistic	0.920392
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.829
Minimum of log data	4.454231	Data are lognormal at 5% significance level	
Maximum of log data	6.23852		
Mean of log data	5.39687	95% UCLs (Assuming Lognormal Distribution)	
Standard Deviation of log data	0.651252	95% H-UCL	492.278
Variance of log data	0.42413	95% Chebyshev (MVUE) UCL	522.382
		97.5% Chebyshev (MVUE) UCL	633.4954
		99% Chebyshev (MVUE) UCL	851.7561
RECOMMENDATION	95% Non-parametric UCLs		
Data are normal (0.05)		CLT UCL	343.068
Use Student's-t UCL		Adj-CLT UCL (Adjusted for skewness)	349.4738
		Mod-t UCL (Adjusted for skewness)	354.6924
		Jackknife UCL	353.6932
		Standard Bootstrap UCL	338.0247
		Bootstrap-t UCL	360.89
		Hall's Bootstrap UCL	353.1635
		Percentile Bootstrap UCL	339.41
		BCA Bootstrap UCL	343.9656
		95% Chebyshev (Mean, Sd) UCL	477.3857
		97.5% Chebyshev (Mean, Sd) UCL	570.7285
		99% Chebyshev (Mean, Sd) UCL	754.0823

Data File		Variable: CSMASb
Raw Statistics		Normal Distribution Test
Number of Valid Samples	9	Shapiro-Wilk Test Statistic
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value
Minimum	0.22	Data not normal at 5% significance level
Maximum	2.98	
Mean	1.178889	95% UCL (Assuming Normal Distribution)
Median	0.87	Student's-t UCL
Standard Deviation	0.976415	
Variance	0.953386	Gamma Distribution Test
Coefficient of Variation	0.82825	A-D Test Statistic
Skewness	1.216769	A-D 5% Critical Value
Gamma Statistics		K-S Test Statistic
k hat	1.7333	0.193666
k star (bias corrected)	1.229608	K-S 5% Critical Value
Theta hat	0.680141	0.28328
Theta star	0.958752	Data follow gamma distribution
nu hat	31.1994	at 5% significance level
nu star	22.13294	
Approx.Chi Square Value (.05)	12.43638	95% UCLs (Assuming Gamma Distribution)
Adjusted Level of Significance	0.02308	Approximate Gamma UCL
Adjusted Chi Square Value	10.93432	Adjusted Gamma UCL
Log-transformed Statistics		Lognormal Distribution Test
Minimum of log data	-1.514128	Shapiro-Wilk Test Statistic
Maximum of log data	1.091923	Shapiro-Wilk 5% Critical Value
Mean of log data	-0.150822	Data are lognormal at 5% significance level
Standard Deviation of log data	0.874851	
Variance of log data	0.765365	95% UCLs (Assuming Lognormal Distribution)
		95% H-UCL
		95% Chebyshev (MVUE) UCL
		97.5% Chebyshev (MVUE) UCL
		99% Chebyshev (MVUE) UCL
RECOMMENDATION		95% Non-parametric UCLs
Data follow gamma distribution (0.05)		CLT UCL
Use Approximate Gamma UCL		Adj-CLT UCL (Adjusted for skewness)
		Mod-t UCL (Adjusted for skewness)
		Jackknife UCL
		Standard Bootstrap UCL
		Bootstrap-t UCL
		Hall's Bootstrap UCL
		Percentile Bootstrap UCL
		BCA Bootstrap UCL
		95% Chebyshev (Mean, Sd) UCL
		97.5% Chebyshev (Mean, Sd) UCL
		99% Chebyshev (Mean, Sd) UCL

Data File	Variable:	CSMACd
Raw Statistics		Normal Distribution Test
Number of Valid Samples	9	Shapiro-Wilk Test Statistic
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value
Minimum	4.46	Data are normal at 5% significance level
Maximum	45.55	
Mean	21.91556	95% UCL (Assuming Normal Distribution)
Median	21.15	Student's-t UCL
Standard Deviation	13.58631	30.33702
Variance	184.5878	
Coefficient of Variation	0.619939	Gamma Distribution Test
Skewness	0.553945	A-D Test Statistic
Gamma Statistics		0.260669
k hat	2.490377	A-D 5% Critical Value
k star (bias corrected)	1.734326	0.728314
Theta hat	8.800094	K-S Test Statistic
Theta star	12.63636	0.204726
nu hat	44.82679	K-S 5% Critical Value
nu star	31.21786	0.281921
Approx.Chi Square Value (.05)	19.45076	
Adjusted Level of Significance	0.02308	Data follow gamma distribution
Adjusted Chi Square Value	17.51832	at 5% significance level
Log-transformed Statistics		95% UCLs (Assuming Gamma Distribution)
Minimum of log data	1.495149	Approximate Gamma UCL
Maximum of log data	3.818811	35.17378
Mean of log data	2.87319	Adjusted Gamma UCL
Standard Deviation of log data	0.751974	39.0538
Variance of log data	0.565465	
RECOMMENDATION		Lognormal Distribution Test
Data are normal (0.05)		Shapiro-Wilk Test Statistic
Use Student's-t UCL		0.936975
		Shapiro-Wilk 5% Critical Value
		0.829
		Data are lognormal at 5% significance level
		95% Non-parametric UCLs
		CLT UCL
		29.36472
		Adj-CLT UCL (Adjusted for skewness)
		30.25824
		Mod-t UCL (Adjusted for skewness)
		30.47639
		Jackknife UCL
		30.33702
		Standard Bootstrap UCL
		28.82852
		Bootstrap-t UCL
		31.97717
		Hall's Bootstrap UCL
		35.33868
		Percentile Bootstrap UCL
		29.08778
		BCA Bootstrap UCL
		29.64444
		95% Chebyshev (Mean, Sd) UCL
		41.656
		97.5% Chebyshev (Mean, Sd) UCL
		50.19771
		99% Chebyshev (Mean, Sd) UCL
		66.97624

Data File	Variable:	CSMACu
Raw Statistics		Normal Distribution Test
Number of Valid Samples	9	Shapiro-Wilk Test Statistic
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value
Minimum	46.2	Data are normal at 5% significance level
Maximum	519.9	
Mean	277.7889	95% UCL (Assuming Normal Distribution)
Median	334.3	Student's-t UCL
Standard Deviation	176.9831	
Variance	31323.01	Gamma Distribution Test
Coefficient of Variation	0.637114	A-D Test Statistic
Skewness	0.01301	A-D 5% Critical Value
Gamma Statistics		K-S Test Statistic
k hat	2.083465	K-S 5% Critical Value
k star (bias corrected)	1.463051	Data follow gamma distribution
Theta hat	133.3302	at 5% significance level
Theta star	189.8696	95% UCLs (Assuming Gamma Distribution)
nu hat	37.50237	Approximate Gamma UCL
nu star	26.33492	Adjusted Gamma UCL
Approx.Chi Square Value (.05)	15.63566	
Adjusted Level of Significance	0.02308	Lognormal Distribution Test
Adjusted Chi Square Value	13.92563	Shapiro-Wilk Test Statistic
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value
Minimum of log data	3.83298	Data are lognormal at 5% significance level
Maximum of log data	6.253636	95% UCLs (Assuming Lognormal Distribution)
Mean of log data	5.368081	95% H-UCL
Standard Deviation of log data	0.842607	95% Chebyshev (MVUE) UCL
Variance of log data	0.709986	97.5% Chebyshev (MVUE) UCL
		99% Chebyshev (MVUE) UCL
RECOMMENDATION		95% Non-parametric UCLs
Data are normal (0.05)		CLT UCL
Use Student's-t UCL		Adj-CLT UCL (Adjusted for skewness)
		Mod-t UCL (Adjusted for skewness)
		Jackknife UCL
		Standard Bootstrap UCL
		Bootstrap-t UCL
		Hall's Bootstrap UCL
		Percentile Bootstrap UCL
		BCA Bootstrap UCL
		95% Chebyshev (Mean, Sd) UCL
		97.5% Chebyshev (Mean, Sd) UCL
		99% Chebyshev (Mean, Sd) UCL

Data File		Variable: CSMAPb
	Raw Statistics	Normal Distribution Test
Number of Valid Samples	9	Shapiro-Wilk Test Statistic 0.902992
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value 0.829
Minimum	210.6	Data are normal at 5% significance level
Maximum	2041	
Mean	857.9111	95% UCL (Assuming Normal Distribution)
Median	992	Student's-t UCL 1232.713
Standard Deviation	604.6658	
Variance	365620.8	Gamma Distribution Test
Coefficient of Variation	0.704812	A-D Test Statistic 0.396297
Skewness	0.762506	A-D 5% Critical Value 0.729628
		K-S Test Statistic 0.227488
		K-S 5% Critical Value 0.282425
	Gamma Statistics	
k hat	2.04787	Data follow gamma distribution
k star (bias corrected)	1.43932	at 5% significance level
Theta hat	418.9286	
Theta star	596.0529	95% UCLs (Assuming Gamma Distribution)
nu hat	36.86165	Approximate Gamma UCL 1452.096
nu star	25.90777	Adjusted Gamma UCL 1632.28
Approx.Chi Square Value (.05)	15.30654	
Adjusted Level of Significance	0.02308	Lognormal Distribution Test
Adjusted Chi Square Value	13.61688	Shapiro-Wilk Test Statistic 0.910663
		Shapiro-Wilk 5% Critical Value 0.829
		Data are lognormal at 5% significance level
	Log-transformed Statistics	
Minimum of log data	5.349961	95% UCLs (Assuming Lognormal Distribution)
Maximum of log data	7.621195	95% H-UCL 2116.789
Mean of log data	6.490903	95% Chebyshev (MVUE) UCL 1950.957
Standard Deviation of log data	0.815788	97.5% Chebyshev (MVUE) UCL 2414.914
Variance of log data	0.665511	99% Chebyshev (MVUE) UCL 3326.267
		95% Non-parametric UCLs
		CLT UCL 1189.44
		Adj-CLT UCL (Adjusted for skewness) 1244.179
		Mod-t UCL (Adjusted for skewness) 1241.251
		Jackknife UCL 1232.713
		Standard Bootstrap UCL 1181.548
		Bootstrap-t UCL 1301.979
		Hall's Bootstrap UCL 1254.546
		Percentile Bootstrap UCL 1186.767
		BCA Bootstrap UCL 1220.922
		95% Chebyshev (Mean, Sd) UCL 1736.47
		97.5% Chebyshev (Mean, Sd) UCL 2116.623
		99% Chebyshev (Mean, Sd) UCL 2863.361
	RECOMMENDATION	
Data are normal (0.05)		
Use Student's-t UCL		

Data File		Variable: CSMASe
	Raw Statistics	Normal Distribution Test
Number of Valid Samples	9	Shapiro-Wilk Test Statistic 0.932041
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value 0.829
Minimum	0.03	Data are normal at 5% significance level
Maximum	1.85	
Mean	0.951111	95% UCL (Assuming Normal Distribution)
Median	1	Student's-t UCL 1.338001
Standard Deviation	0.624168	
Variance	0.389586	Gamma Distribution Test
Coefficient of Variation	0.656252	A-D Test Statistic 0.83444
Skewness	-0.14134	A-D 5% Critical Value 0.740965
		K-S Test Statistic 0.328841
		K-S 5% Critical Value 0.286097
	Gamma Statistics	
k hat	1.137479	Data do not follow gamma distribution
k star (bias corrected)	0.832393	at 5% significance level
Theta hat	0.836157	
Theta star	1.142622	95% UCLs (Assuming Gamma Distribution)
nu hat	20.47462	Approximate Gamma UCL 1.965978
nu star	14.98308	Adjusted Gamma UCL 2.317232
Approx.Chi Square Value (.05)	7.248593	
Adjusted Level of Significance	0.02308	Lognormal Distribution Test
Adjusted Chi Square Value	6.149827	Shapiro-Wilk Test Statistic 0.753154
		Shapiro-Wilk 5% Critical Value 0.829
		Data not lognormal at 5% significance level
	Log-transformed Statistics	
Minimum of log data	-3.506558	95% UCLs (Assuming Lognormal Distribution)
Maximum of log data	0.615186	95% H-UCL 13.99339
Mean of log data	-0.550244	95% Chebyshev (MVUE) UCL 4.156222
Standard Deviation of log data	1.421928	97.5% Chebyshev (MVUE) UCL 5.381775
Variance of log data	2.021881	99% Chebyshev (MVUE) UCL 7.789136
		95% Non-parametric UCLs
		CLT UCL 1.293333
		Adj-CLT UCL (Adjusted for skewness) 1.282859
		Mod-t UCL (Adjusted for skewness) 1.336368
		Jackknife UCL 1.338001
		Standard Bootstrap UCL 1.279839
		Bootstrap-t UCL 1.341488
		Hall's Bootstrap UCL 1.325953
		Percentile Bootstrap UCL 1.272222
		BCA Bootstrap UCL 1.264444
		95% Chebyshev (Mean, Sd) UCL 1.858007
		97.5% Chebyshev (Mean, Sd) UCL 2.250421
		99% Chebyshev (Mean, Sd) UCL 3.021243
	RECOMMENDATION	
Data are normal (0.05)		
Use Student's-t UCL		

Data File		Variable: CSMAAg
Raw Statistics		Normal Distribution Test
Number of Valid Samples	9	Shapiro-Wilk Test Statisticic
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value
Minimum	1.42	Data not normal at 5% significance level
Maximum	21.67	
Mean	8.688889	95% UCL (Assuming Normal Distribution)
Median	5.1	Student's-t UCL
Standard Deviation	7.810033	
Variance	60.99661	Gamma Distribution Test
Coefficient of Variation	0.898853	A-D Test Statistic
Skewness	1.104576	A-D 5% Critical Value
Gamma Statistics		K-S Test Statistic
k hat	1.504733	K-S 5% Critical Value
k star (bias corrected)	1.077229	Data follow gamma distribution
Theta hat	5.774374	at 5% significance level
Theta star	8.065961	95% UCLs (Assuming Gamma Distribution)
nu hat	27.08519	Approximate Gamma UCL
nu star	19.39013	Adjusted Gamma UCL
Approx.Chi Square Value (.05)	10.40135	
Adjusted Level of Significance	0.02308	Lognormal Distribution Test
Adjusted Chi Square Value	9.045442	Shapiro-Wilk Test Statisticic
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value
Minimum of log data	0.350657	Data are lognormal at 5% significance level
Maximum of log data	3.075929	95% UCLs (Assuming Lognormal Distribution)
Mean of log data	1.794335	95% H-UCL
Standard Deviation of log data	0.926373	95% Chebyshev (MVUE) UCL
Variance of log data	0.858166	97.5% Chebyshev (MVUE) UCL
		99% Chebyshev (MVUE) UCL
RECOMMENDATION		95% Non-parametric UCLs
Data follow gamma distribution (0.05)		CLT UCL
Use Approximate Gamma UCL		Adj-CLT UCL (Adjusted for skewness)
		Mod-t UCL (Adjusted for skewness)
		Jackknife UCL
		Standard Bootstrap UCL
		Bootstrap-t UCL
		Hall's Bootstrap UCL
		Percentile Bootstrap UCL
		BCA Bootstrap UCL
		95% Chebyshev (Mean, Sd) UCL
		97.5% Chebyshev (Mean, Sd) UCL
		99% Chebyshev (Mean, Sd) UCL

Data File		Variable: CSMATI
Raw Statistics		Normal Distribution Test
Number of Valid Samples	9	Shapiro-Wilk Test Statistic
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value
Minimum	0.66	Data not normal at 5% significance level
Maximum	5.26	
Mean	1.81	95% UCL (Assuming Normal Distribution)
Median	1.31	Student's-t UCL
Standard Deviation	1.403772	
Variance	1.970575	Gamma Distribution Test
Coefficient of Variation	0.775564	A-D Test Statistic
Skewness	2.237761	A-D 5% Critical Value
Gamma Statistics		K-S Test Statistic
k hat	2.790784	K-S 5% Critical Value
k star (bias corrected)	1.934597	Data follow gamma distribution
Theta hat	0.648563	at 5% significance level
Theta star	0.935596	95% UCLs (Assuming Gamma Distribution)
nu hat	50.23411	Approximate Gamma UCL
nu star	34.82274	Adjusted Gamma UCL
Approx.Chi Square Value (.05)	22.32075	
Adjusted Level of Significance	0.02308	Lognormal Distribution Test
Adjusted Chi Square Value	20.23482	Shapiro-Wilk Test Statistic
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value
Minimum of log data	-0.415515	Data are lognormal at 5% significance level
Maximum of log data	1.660131	95% UCLs (Assuming Lognormal Distribution)
Mean of log data	0.403596	95% H-UCL
Standard Deviation of log data	0.609739	95% Chebyshev (MVUE) UCL
Variance of log data	0.371781	97.5% Chebyshev (MVUE) UCL
		99% Chebyshev (MVUE) UCL
RECOMMENDATION		95% Non-parametric UCLs
Data follow gamma distribution (0.05)		CLT UCL
Use Approximate Gamma UCL		Adj-CLT UCL (Adjusted for skewness)
		Mod-t UCL (Adjusted for skewness)
		Jackknife UCL
		Standard Bootstrap UCL
		Bootstrap-t UCL
		Hall's Bootstrap UCL
		Percentile Bootstrap UCL
		BCA Bootstrap UCL
		95% Chebyshev (Mean, Sd) UCL
		97.5% Chebyshev (Mean, Sd) UCL
		99% Chebyshev (Mean, Sd) UCL

Data File		Variable: CSMAZn
Raw Statistics		Normal Distribution Test
Number of Valid Samples	9	Shapiro-Wilk Test Statisticic
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value
Minimum	255	Data are normal at 5% significance level
Maximum	1740	
Mean	946.6556	95% UCL (Assuming Normal Distribution)
Median	761.1	Student's-t UCL
Standard Deviation	542.9359	1283.194
Variance	294779.4	
Coefficient of Variation	0.573531	Gamma Distribution Test
Skewness	0.380001	A-D Test Statistic
Gamma Statistics		A-D 5% Critical Value
k hat	2.953548	0.309694
k star (bias corrected)	2.043106	0.726938
Theta hat	320.5147	K-S Test Statistic
Theta star	463.3413	0.166262
nu hat	53.16387	K-S 5% Critical Value
nu star	36.77591	0.281393
Approx.Chi Square Value (.05)	23.89182	
Adjusted Level of Significance	0.02308	Data follow gamma distribution
Adjusted Chi Square Value	21.72597	at 5% significance level
Log-transformed Statistics		95% UCLs (Assuming Gamma Distribution)
Minimum of log data	5.541264	Approximate Gamma UCL
Maximum of log data	7.46164	1457.157
Mean of log data	6.674199	Adjusted Gamma UCL
Standard Deviation of log data	0.677054	1602.42
Variance of log data	0.458402	
		Lognormal Distribution Test
		Shapiro-Wilk Test Statisticic
		Shapiro-Wilk 5% Critical Value
		Data are lognormal at 5% significance level
		95% UCLs (Assuming Lognormal Distribution)
		95% H-UCL
		1860.418
		95% Chebyshev (MVUE) UCL
		1939.741
		97.5% Chebyshev (MVUE) UCL
		2360.747
		99% Chebyshev (MVUE) UCL
		3187.731
RECOMMENDATION		95% Non-parametric UCLs
Data are normal (0.05)		CLT UCL
		1244.339
Use Student's-t UCL		Adj-CLT UCL (Adjusted for skewness)
		1268.834
		Mod-t UCL (Adjusted for skewness)
		1287.015
		Jackknife UCL
		1283.194
		Standard Bootstrap UCL
		1224.099
		Bootstrap-t UCL
		1343.104
		Hall's Bootstrap UCL
		1328.785
		Percentile Bootstrap UCL
		1241.156
		BCA Bootstrap UCL
		1235.867
		95% Chebyshev (Mean, Sd) UCL
		1735.523
		97.5% Chebyshev (Mean, Sd) UCL
		2076.867
		99% Chebyshev (Mean, Sd) UCL
		2747.37

Data File		Variable: CSMAHg
	Raw Statistics	Normal Distribution Test
Number of Valid Samples	9	Shapiro-Wilk Test Statistic 0.937674
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value 0.829
Minimum	0.068	Data are normal at 5% significance level
Maximum	0.38	
Mean	0.217667	95% UCL (Assuming Normal Distribution)
Median	0.182	Student's-t UCL 0.283877
Standard Deviation	0.106818	
Variance	0.01141	Gamma Distribution Test
Coefficient of Variation	0.490739	A-D Test Statistic 0.224938
Skewness	0.420683	A-D 5% Critical Value 0.724339
		K-S Test Statistic 0.13304
		K-S 5% Critical Value 0.280264
	Gamma Statistics	
k hat	4.282076	Data follow gamma distribution
k star (bias corrected)	2.928792	at 5% significance level
Theta hat	0.050832	
Theta star	0.07432	95% UCLs (Assuming Gamma Distribution)
nu hat	77.07737	Approximate Gamma UCL 0.309829
nu star	52.71825	Adjusted Gamma UCL 0.334706
Approx.Chi Square Value (.05)	37.03655	
Adjusted Level of Significance	0.02308	Lognormal Distribution Test
Adjusted Chi Square Value	34.28379	Shapiro-Wilk Test Statistic 0.948042
		Shapiro-Wilk 5% Critical Value 0.829
		Data are lognormal at 5% significance level
	Log-transformed Statistics	
Minimum of log data	-2.688248	95% UCLs (Assuming Lognormal Distribution)
Maximum of log data	-0.967584	95% H-UCL 0.354794
Mean of log data	-1.646077	95% Chebyshev (MVUE) UCL 0.397579
Standard Deviation of log data	0.547192	97.5% Chebyshev (MVUE) UCL 0.474474
Variance of log data	0.299419	99% Chebyshev (MVUE) UCL 0.62552
		95% Non-parametric UCLs
	RECOMMENDATION	CLT UCL 0.276233
Data are normal (0.05)		Adj-CLT UCL (Adjusted for skewness) 0.281568
		Mod-t UCL (Adjusted for skewness) 0.28471
	Use Student's-t UCL	Jackknife UCL 0.283877
		Standard Bootstrap UCL 0.272819
		Bootstrap-t UCL 0.300383
		Hall's Bootstrap UCL 0.293762
		Percentile Bootstrap UCL 0.274222
		BCA Bootstrap UCL 0.280444
		95% Chebyshev (Mean, Sd) UCL 0.372869
		97.5% Chebyshev (Mean, Sd) UCL 0.440025
		99% Chebyshev (Mean, Sd) UCL 0.571941