Data File | Variable: WOACd

| Raw Statistics | |
|---|---|
| Number of Valid Samples | 23 |
| Number of Unique Samples | 2 |
| Minimum | 0.0001 |
| Maximum | 0.0015 |
| Mean | 0.000891 |
| Median | 0.0015 |
| Standard Deviation | 0.00071 |
| Variance | 5.04E-07 |
| Coefficient of Variation | 0.796156 |
| Skewness | -0.281842 |

| Gamma Statistics | |
|---|---|
| k hat | 0.891086 |
| k star (bias corrected) | 0.803843 |
| Theta hat | 0.001 |
| Theta star | 0.001109 |
| nu hat | 40.98995 |
| nu star | 36.97676 |
| Approx.Chi Square Value (.05) | 24.05396 |
| Adjusted Level of Significance | 0.0389 |
| Adjusted Chi Square Value | 23.29834 |

| Log-transformed Statistics | |
|---|---|
| Minimum of log data | -9.21034 |
| Maximum of log data | -6.50229 |
| Mean of log data | -7.679703 |
| Standard Deviation of log data | 1.372629 |
| Variance of log data | 1.88411 |

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

| Normal Distribution Test | |
|---|---|
| Shapiro-Wilk Test Statisitic | 0.634263 |
| Shapiro-Wilk 5% Critical Value | 0.914 |
| Data not normal at 5% significance level | |

| 95% UCL (Assuming Normal Distribution) | |
|---|---|
| Student's-t UCL | 0.001145 |

| Gamma Distribution Test | |
|---|---|
| A-D Test Statistic | 4.22972 |
| A-D 5% Critical Value | 0.774937 |
| K-S Test Statistic | 0.376048 |
| K-S 5% Critical Value | 0.187546 |
| Data do not follow gamma distribution | |
| at 5% significance level | |

| 95% UCLs (Assuming Gamma Distribution) | |
|---|---|
| Approximate Gamma UCL | 0.00137 |
| Adjusted Gamma UCL | 0.001415 |

| Lognormal Distribution Test | |
|---|---|
| Shapiro-Wilk Test Statisitic | 0.634263 |
| Shapiro-Wilk 5% Critical Value | 0.914 |
| Data not lognormal at 5% significance level | |

| 95% UCLs (Assuming Lognormal Distribution) | |
|---|---|
| 95% H-UCL | 0.002909 |
| 95% Chebyshev (MVUE) UCL | 0.002754 |
| 97.5% Chebyshev (MVUE) UCL | 0.003468 |
| 99% Chebyshev (MVUE) UCL | 0.004871 |

| 95% Non-parametric UCLs | |
|---|---|
| CLT UCL | 0.001135 |
| Adj-CLT UCL (Adjusted for skewness) | 0.001125 |
| Mod-t UCL (Adjusted for skewness) | 0.001144 |
| Jackknife UCL | 0.001145 |
| Standard Bootstrap UCL | N/R |
| Bootstrap-t UCL | N/R |
| Hall's Bootstrap UCL | N/A |
| Percentile Bootstrap UCL | N/R |
| BCA Bootstrap UCL | N/R |
| 95% Chebyshev (Mean, Sd) UCL | 0.001536 |
| 97.5% Chebyshev (Mean, Sd) UCL | 0.001815 |
| 99% Chebyshev (Mean, Sd) UCL | 0.002364 |

Recommended UCL exceeds the maximum observation

Consider using 95% or 97.5% Chebyshev (Mean, Sd) UCL

Data File C:\Documents and Settings\acardenas\My Dc Variable: WOA_Cu

| Raw Statistics | |
|---|---|
| Number of Valid Samples | 23 |
| Number of Unique Samples | 13 |
| Minimum | 0.0069 |
| Maximum | 0.05 |
| Mean | 0.027696 |
| Median | 0.015 |
| Standard Deviation | 0.020115 |
| Variance | 0.000405 |
| Coefficient of Variation | 0.726295 |
| Skewness | 0.246101 |

| Gamma Statistics | |
|---|---|
| k hat | 1.766077 |
| k star (bias corrected) | 1.564705 |
| Theta hat | 0.015682 |
| Theta star | 0.0177 |
| nu hat | 81.23956 |
| nu star | 71.97643 |
| Approx.Chi Square Value (.05) | 53.43851 |
| Adjusted Level of Significance | 0.0389 |
| Adjusted Chi Square Value | 52.28073 |

| Log-transformed Statistics | |
|---|---|
| Minimum of log data | -4.976234 |
| Maximum of log data | -2.995732 |
| Mean of log data | -3.895556 |
| Standard Deviation of log data | 0.832366 |
| Variance of log data | 0.692832 |

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

| Normal Distribution Test | |
|---|---|
| Shapiro-Wilk Test Statisitic | 0.701682 |
| Shapiro-Wilk 5% Critical Value | 0.914 |
| Data not normal at 5% significance level | |

| 95% UCL (Assuming Normal Distribution) | |
|---|---|
| Student's-t UCL | 0.034898 |

| Gamma Distribution Test | |
|---|---|
| A-D Test Statistic | 2.624667 |
| A-D 5% Critical Value | 0.757237 |
| K-S Test Statistic | 0.301497 |
| K-S 5% Critical Value | 0.184339 |
| Data do not follow gamma distribution | |
| at 5% significance level | |

| 95% UCLs (Assuming Gamma Distribution) | |
|---|---|
| Approximate Gamma UCL | 0.037303 |
| Adjusted Gamma UCL | 0.038129 |

| Lognormal Distribution Test | |
|---|---|
| Shapiro-Wilk Test Statisitic | 0.775865 |
| Shapiro-Wilk 5% Critical Value | 0.914 |
| Data not lognormal at 5% significance level | |

| 95% UCLs (Assuming Lognormal Distribution) | |
|---|---|
| 95% H-UCL | 0.043428 |
| 95% Chebyshev (MVUE) UCL | 0.051601 |
| 97.5% Chebyshev (MVUE) UCL | 0.061729 |
| 99% Chebyshev (MVUE) UCL | 0.081624 |

| 95% Non-parametric UCLs | |
|---|---|
| CLT UCL | 0.034595 |
| Adj-CLT UCL (Adjusted for skewness) | 0.034825 |
| Mod-t UCL (Adjusted for skewness) | 0.034934 |
| Jackknife UCL | 0.034898 |
| Standard Bootstrap UCL | 0.034458 |
| Bootstrap-t UCL | 0.035552 |
| Hall's Bootstrap UCL | 0.034522 |
| Percentile Bootstrap UCL | 0.034657 |
| BCA Bootstrap UCL | 0.034543 |
| 95% Chebyshev (Mean, Sd) UCL | 0.045978 |
| 97.5% Chebyshev (Mean, Sd) UCL | 0.053889 |
| 99% Chebyshev (Mean, Sd) UCL | 0.069429 |

Data File C:\Documents and Settings\acardenas\My Documents\D Variable: WOA-Pb

| Raw Statistics | |
|---|---|
| Number of Valid Samples | 23 |
| Number of Unique Samples | 12 |
| Minimum | 0.0032 |
| Maximum | 0.0307 |
| Mean | 0.007037 |
| Median | 0.005 |
| Standard Deviation | 0.006581 |
| Variance | 4.33E-05 |
| Coefficient of Variation | 0.93527 |
| Skewness | 3.134179 |

| Gamma Statistics | |
|---|---|
| k hat | 2.71203 |
| k star (bias corrected) | 2.387272 |
| Theta hat | 0.002595 |
| Theta star | 0.002948 |
| nu hat | 124.7534 |
| nu star | 109.8145 |
| Approx.Chi Square Value (.05) | 86.62225 |
| Adjusted Level of Significance | 0.0389 |
| Adjusted Chi Square Value | 85.12992 |

| Log-transformed Statistics | |
|---|---|
| Minimum of log data | -5.744604 |
| Maximum of log data | -3.483493 |
| Mean of log data | -5.152128 |
| Standard Deviation of log data | 0.528331 |
| Variance of log data | 0.279133 |

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

| Normal Distribution Test | |
|---|---|
| Shapiro-Wilk Test Statisitic | 0.464494 |
| Shapiro-Wilk 5% Critical Value | 0.914 |
| Data not normal at 5% significance level | |

| 95% UCL (Assuming Normal Distribution) | |
|---|---|
| Student's-t UCL | 0.009393 |

| Gamma Distribution Test | |
|---|---|
| A-D Test Statistic | 4.081588 |
| A-D 5% Critical Value | 0.751608 |
| K-S Test Statistic | 0.344193 |
| K-S 5% Critical Value | 0.18303 |
| Data do not follow gamma distribution | |
| at 5% significance level | |

| 95% UCLs (Assuming Gamma Distribution) | |
|---|---|
| Approximate Gamma UCL | 0.008921 |
| Adjusted Gamma UCL | 0.009077 |

| Lognormal Distribution Test | |
|---|---|
| Shapiro-Wilk Test Statisitic | 0.659955 |
| Shapiro-Wilk 5% Critical Value | 0.914 |
| Data not lognormal at 5% significance level | |

| 95% UCLs (Assuming Lognormal Distribution) | |
|---|---|
| 95% H-UCL | 0.008337 |
| 95% Chebyshev (MVUE) UCL | 0.009921 |
| 97.5% Chebyshev (MVUE) UCL | 0.011354 |
| 99% Chebyshev (MVUE) UCL | 0.01417 |

| 95% Non-parametric UCLs | |
|---|---|
| CLT UCL | 0.009294 |
| Adj-CLT UCL (Adjusted for skewness) | 0.010253 |
| Mod-t UCL (Adjusted for skewness) | 0.009543 |
| Jackknife UCL | 0.009393 |
| Standard Bootstrap UCL | 0.009181 |
| Bootstrap-t UCL | 0.020044 |
| Hall's Bootstrap UCL | 0.022353 |
| Percentile Bootstrap UCL | 0.009407 |
| BCA Bootstrap UCL | 0.01053 |
| 95% Chebyshev (Mean, Sd) UCL | 0.013019 |
| 97.5% Chebyshev (Mean, Sd) UCL | 0.015607 |
| 99% Chebyshev (Mean, Sd) UCL | 0.020691 |

Data File C:\Program Files\ProUCL\DRP\Water EPCs.xls Variable: WOAZn

| Raw Statistics | |
|---|---|
| Number of Valid Samples | 23 |
| Number of Unique Samples | 23 |
| Minimum | 0.0136 |
| Maximum | 1.081 |
| Mean | 0.126613 |
| Median | 0.0556 |
| Standard Deviation | 0.225734 |
| Variance | 0.050956 |
| Coefficient of Variation | 1.782868 |
| Skewness | 3.775119 |

| Gamma Statistics | |
|---|---|
| k hat | 0.82385 |
| k star (bias corrected) | 0.745377 |
| Theta hat | 0.153685 |
| Theta star | 0.169864 |
| nu hat | 37.8971 |
| nu star | 34.28733 |
| Approx.Chi Square Value (.05) | 21.89198 |
| Adjusted Level of Significance | 0.0389 |
| Adjusted Chi Square Value | 21.17398 |

| Log-transformed Statistics | |
|---|---|
| Minimum of log data | -4.297685 |
| Maximum of log data | 0.077887 |
| Mean of log data | -2.784245 |
| Standard Deviation of log data | 1.089478 |
| Variance of log data | 1.186962 |

RECOMMENDATION

Data are lognormal (0.05)

Use 95% Chebyshev (MVUE) UCL

| Normal Distribution Test | |
|---|---|
| Shapiro-Wilk Test Statisitic | 0.496914 |
| Shapiro-Wilk 5% Critical Value | 0.914 |
| Data not normal at 5% significance level | |

| 95% UCL (Assuming Normal Distribution) | |
|---|---|
| Student's-t UCL | 0.207437 |

| Gamma Distribution Test | |
|---|---|
| A-D Test Statistic | 1.420286 |
| A-D 5% Critical Value | 0.778418 |
| K-S Test Statistic | 0.215308 |
| K-S 5% Critical Value | 0.188063 |
| Data do not follow gamma distribution | |
| at 5% significance level | |

| 95% UCLs (Assuming Gamma Distribution) | |
|---|---|
| Approximate Gamma UCL | 0.198302 |
| Adjusted Gamma UCL | 0.205026 |

| Lognormal Distribution Test | |
|---|---|
| Shapiro-Wilk Test Statisitic | 0.939807 |
| Shapiro-Wilk 5% Critical Value | 0.914 |
| Data are lognormal at 5% significance level | |

| 95% UCLs (Assuming Lognormal Distribution) | |
|---|---|
| 95% H-UCL | 0.20726 |
| 95% Chebyshev (MVUE) UCL | 0.229894 |
| 97.5% Chebyshev (MVUE) UCL | 0.282807 |
| 99% Chebyshev (MVUE) UCL | 0.386745 |

| 95% Non-parametric UCLs | |
|---|---|
| CLT UCL | 0.204034 |
| Adj-CLT UCL (Adjusted for skewness) | 0.243624 |
| Mod-t UCL (Adjusted for skewness) | 0.213612 |
| Jackknife UCL | 0.207437 |
| Standard Bootstrap UCL | 0.202971 |
| Bootstrap-t UCL | 0.360814 |
| Hall's Bootstrap UCL | 0.461864 |
| Percentile Bootstrap UCL | 0.216602 |
| BCA Bootstrap UCL | 0.258587 |
| 95% Chebyshev (Mean, Sd) UCL | 0.331782 |
| 97.5% Chebyshev (Mean, Sd) UCL | 0.420558 |
| 99% Chebyshev (Mean, Sd) UCL | 0.594942 |

Data File

Variable: WONAs

| Raw Statistics | |
|---|---|
| Number of Valid Samples | 6 |
| Number of Unique Samples | 4 |
| Minimum | 0.001 |
| Maximum | 0.008 |
| Mean | 0.005167 |
| Median | 0.0065 |
| Standard Deviation | 0.003312 |
| Variance | 1.10E-05 |
| Coefficient of Variation | 0.640954 |
| Skewness | -0.763643 |

| Gamma Statistics | |
|---|---|
| k hat | 1.680461 |
| k star (bias corrected) | 0.951342 |
| Theta hat | 0.003075 |
| Theta star | 0.005431 |
| nu hat | 20.16554 |
| nu star | 11.4161 |
| Approx.Chi Square Value (.05) | 4.844034 |
| Adjusted Level of Significance | 0.01222 |
| Adjusted Chi Square Value | 3.422469 |

| Log-transformed Statistics | |
|---|---|
| Minimum of log data | -6.907755 |
| Maximum of log data | -4.828314 |
| Mean of log data | -5.591663 |
| Standard Deviation of log data | 1.024942 |
| Variance of log data | 1.050506 |

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

| Normal Distribution Test | |
|---|---|
| Shapiro-Wilk Test Statisitic | 0.783229 |
| Shapiro-Wilk 5% Critical Value | 0.788 |
| Data not normal at 5% significance level | |

| 95% UCL (Assuming Normal Distribution) | |
|---|---|
| Student's-t UCL | 0.007891 |

| Gamma Distribution Test | |
|---|---|
| A-D Test Statistic | 0.894827 |
| A-D 5% Critical Value | 0.706498 |
| K-S Test Statistic | 0.342284 |
| K-S 5% Critical Value | 0.336865 |
| Data do not follow gamma distribution | |
| at 5% significance level | |

| 95% UCLs (Assuming Gamma Distribution) | |
|---|---|
| Approximate Gamma UCL | 0.012176 |
| Adjusted Gamma UCL | 0.017234 |

| Lognormal Distribution Test | |
|---|---|
| Shapiro-Wilk Test Statisitic | 0.712303 |
| Shapiro-Wilk 5% Critical Value | 0.788 |
| Data not lognormal at 5% significance level | |

| 95% UCLs (Assuming Lognormal Distribution) | |
|---|---|
| 95% H-UCL | 0.047173 |
| 95% Chebyshev (MVUE) UCL | 0.015735 |
| 97.5% Chebyshev (MVUE) UCL | 0.020104 |
| 99% Chebyshev (MVUE) UCL | 0.028686 |

| 95% Non-parametric UCLs | |
|---|---|
| CLT UCL | 0.00739 |
| Adj-CLT UCL (Adjusted for skewness) | 0.00694 |
| Mod-t UCL (Adjusted for skewness) | 0.007821 |
| Jackknife UCL | 0.007891 |
| Standard Bootstrap UCL | N/R |
| Bootstrap-t UCL | N/R |
| Hall's Bootstrap UCL | N/R |
| Percentile Bootstrap UCL | N/R |
| BCA Bootstrap UCL | N/R |
| 95% Chebyshev (Mean, Sd) UCL | 0.01106 |
| 97.5% Chebyshev (Mean, Sd) UCL | 0.01361 |
| 99% Chebyshev (Mean, Sd) UCL | 0.018618 |

Recommended UCL exceeds the maximum observation

Consider using 95% or 97.5% Chebyshev (Mean, Sd) UCL

Data File Variable: WONCd

| Raw Statistics | |
|---|---|
| Number of Valid Samples | 6 |
| Number of Unique Samples | 1 |
| Minimum | 0.0015 |
| Maximum | 0.0015 |
| Mean | 0.0015 |
| Median | 0.0015 |

Data contains constant observations with no distinct values
There is no need to calculate lognormal statistics

Data File

Variable: WONCu

| Raw Statistics | |
|---|---|
| Number of Valid Samples | 6 |
| Number of Unique Samples | 2 |
| Minimum | 0.046 |
| Maximum | 0.05 |
| Mean | 0.049333 |
| Median | 0.05 |
| Standard Deviation | 0.001633 |
| Variance | 2.67E-06 |
| Coefficient of Variation | 0.033101 |
| Skewness | -2.44949 |

| Gamma Statistics | |
|---|---|
| k hat | 1055.209 |
| k star (bias corrected) | 527.7158 |
| Theta hat | 4.68E-05 |
| Theta star | 9.35E-05 |
| nu hat | 12662.51 |
| nu star | 6332.589 |
| Approx.Chi Square Value (.05) | 6148.582 |
| Adjusted Level of Significance | 0.01222 |
| Adjusted Chi Square Value | 6082.024 |

| Log-transformed Statistics | |
|---|---|
| Minimum of log data | -3.079114 |
| Maximum of log data | -2.995732 |
| Mean of log data | -3.009629 |
| Standard Deviation of log data | 0.03404 |
| Variance of log data | 0.001159 |

RECOMMENDATION

Data are Non-parametric (0.05)

Use Student's-t UCL
or Modified-t UCL

Recommended UCL exceeds the maximum observation

| Normal Distribution Test | |
|---|---|
| Shapiro-Wilk Test Statisitic | 0.496293 |
| Shapiro-Wilk 5% Critical Value | 0.788 |
| Data not normal at 5% significance level | |

| 95% UCL (Assuming Normal Distribution) | |
|---|---|
| Student's-t UCL | 0.050677 |

| Gamma Distribution Test | |
|---|---|
| A-D Test Statistic | 1.717547 |
| A-D 5% Critical Value | 0.69621 |
| K-S Test Statistic | 0.50599 |
| K-S 5% Critical Value | 0.33154 |
| Data do not follow gamma distribution | |
| at 5% significance level | |

| 95% UCLs (Assuming Gamma Distribution) | |
|---|---|
| Approximate Gamma UCL | 0.05081 |
| Adjusted Gamma UCL | 0.051366 |

| Lognormal Distribution Test | |
|---|---|
| Shapiro-Wilk Test Statisitic | 0.496293 |
| Shapiro-Wilk 5% Critical Value | 0.788 |
| Data not lognormal at 5% significance level | |

| 95% UCLs (Assuming Lognormal Distribution) | |
|---|---|
| 95% H-UCL | N/A |
| 95% Chebyshev (MVUE) UCL | 0.052322 |
| 97.5% Chebyshev (MVUE) UCL | 0.053615 |
| 99% Chebyshev (MVUE) UCL | 0.056155 |

| 95% Non-parametric UCLs | |
|---|---|
| CLT UCL | 0.05043 |
| Adj-CLT UCL (Adjusted for skewness) | 0.049718 |
| Mod-t UCL (Adjusted for skewness) | 0.050566 |
| Jackknife UCL | 0.050677 |
| Standard Bootstrap UCL | N/R |
| Bootstrap-t UCL | N/R |
| Hall's Bootstrap UCL | N/A |
| Percentile Bootstrap UCL | N/R |
| BCA Bootstrap UCL | N/R |
| 95% Chebyshev (Mean, Sd) UCL | 0.052239 |
| 97.5% Chebyshev (Mean, Sd) UCL | 0.053497 |
| 99% Chebyshev (Mean, Sd) UCL | 0.055967 |

Data File Variable: WONPb

| Raw Statistics | |
|---|---|
| Number of Valid Samples | 6 |
| Number of Unique Samples | 1 |
| Minimum | 0.005 |
| Maximum | 0.005 |
| Mean | 0.005 |
| Median | 0.005 |

Data contains constant observations with no distinct values
There is no need to calculate lognormal statistics

Data File

Variable: WONZn

Raw Statistics

| | |
|---|---|
| Number of Valid Samples | 6 |
| Number of Unique Samples | 6 |
| Minimum | 0.021 |
| Maximum | 1.611 |
| Mean | 0.375667 |
| Median | 0.0615 |
| Standard Deviation | 0.629726 |
| Variance | 0.396555 |
| Coefficient of Variation | 1.67629 |
| Skewness | 2.085572 |

Gamma Statistics

| | |
|---|---|
| k hat | 0.503345 |
| k star (bias corrected) | 0.362784 |
| Theta hat | 0.74634 |
| Theta star | 1.035512 |
| nu hat | 6.04014 |
| nu star | 4.353403 |
| Approx.Chi Square Value (.05) | 0.865754 |
| Adjusted Level of Significance | 0.01222 |
| Adjusted Chi Square Value | 0.437763 |

Log-transformed Statistics

| | |
|---|---|
| Minimum of log data | -3.863233 |
| Maximum of log data | 0.476855 |
| Mean of log data | -2.23967 |
| Standard Deviation of log data | 1.736346 |
| Variance of log data | 3.014896 |

RECOMMENDATION

Assuming gamma distribution (0.05)

Use Approximate Gamma UCL

Recommended UCL exceeds the maximum observation

Normal Distribution Test

| | |
|---|---|
| Shapiro-Wilk Test Statisitic | 0.666029 |
| Shapiro-Wilk 5% Critical Value | 0.788 |

Data not normal at 5% significance level

95% UCL (Assuming Normal Distribution)

| | |
|---|---|
| Student's-t UCL | 0.893705 |

Gamma Distribution Test

| | |
|---|---|
| A-D Test Statistic | 0.612236 |
| A-D 5% Critical Value | 0.735651 |
| K-S Test Statistic | 0.35293 |
| K-S 5% Critical Value | 0.348541 |

Data follow approximate gamma distibution at 5% significance level

95% UCLs (Assuming Gamma Distribution)

| | |
|---|---|
| Approximate Gamma UCL | 1.889021 |
| Adjusted Gamma UCL | 3.735878 |

Lognormal Distribution Test

| | |
|---|---|
| Shapiro-Wilk Test Statisitic | 0.874215 |
| Shapiro-Wilk 5% Critical Value | 0.788 |

Data are lognormal at 5% significance level

95% UCLs (Assuming Lognormal Distribution)

| | |
|---|---|
| 95% H-UCL | 114.9188 |
| 95% Chebyshev (MVUE) UCL | 1.208929 |
| 97.5% Chebyshev (MVUE) UCL | 1.595105 |
| 99% Chebyshev (MVUE) UCL | 2.353671 |

95% Non-parametric UCLs

| | |
|---|---|
| CLT UCL | 0.798533 |
| Adj-CLT UCL (Adjusted for skewness) | 1.03242 |
| Mod-t UCL (Adjusted for skewness) | 0.930186 |
| Jackknife UCL | 0.893705 |
| Standard Bootstrap UCL | 0.759127 |
| Bootstrap-t UCL | 10.59173 |
| Hall's Bootstrap UCL | 6.476002 |
| Percentile Bootstrap UCL | 0.823667 |
| BCA Bootstrap UCL | 0.974 |
| 95% Chebyshev (Mean, Sd) UCL | 1.496273 |
| 97.5% Chebyshev (Mean, Sd) UCL | 1.98116 |
| 99% Chebyshev (Mean, Sd) UCL | 2.933627 |

Data File

Variable: WMAAs

| Raw Statistics | |
|---|---|
| Number of Valid Samples | 5 |
| Number of Unique Samples | 4 |
| Minimum | 0.0005 |
| Maximum | 0.036 |
| Mean | 0.013 |
| Median | 0.001 |
| Standard Deviation | 0.017186 |
| Variance | 0.000295 |
| Coefficient of Variation | 1.322037 |
| Skewness | 0.76142 |

| Gamma Statistics | |
|---|---|
| k hat | 0.441696 |
| k star (bias corrected) | 0.310012 |
| Theta hat | 0.029432 |
| Theta star | 0.041934 |
| nu hat | 4.416959 |
| nu star | 3.100117 |
| Approx.Chi Square Value (.05) | 0.402499 |
| Adjusted Level of Significance | 0.0086 |
| Adjusted Chi Square Value | 0.150837 |

| Log-transformed Statistics | |
|---|---|
| Minimum of log data | -7.600902 |
| Maximum of log data | -3.324236 |
| Mean of log data | -5.809143 |
| Standard Deviation of log data | 2.158142 |
| Variance of log data | 4.657577 |

RECOMMENDATION

Data follow gamma distribution (0.05)

Use Adjusted Gamma UCL

| Normal Distribution Test | |
|---|---|
| Shapiro-Wilk Test Statisitic | 0.761122 |
| Shapiro-Wilk 5% Critical Value | 0.762 |
| Data not normal at 5% significance level | |

| 95% UCL (Assuming Normal Distribution) | |
|---|---|
| Student's-t UCL | 0.029385 |

| Gamma Distribution Test | |
|---|---|
| A-D Test Statistic | 0.689314 |
| A-D 5% Critical Value | 0.719181 |
| K-S Test Statistic | 0.349155 |
| K-S 5% Critical Value | 0.374037 |
| Data follow gamma distribution | |
| at 5% significance level | |

| 95% UCLs (Assuming Gamma Distribution) | |
|---|---|
| Approximate Gamma UCL | 0.100128 |
| Adjusted Gamma UCL | 0.267187 |

| Lognormal Distribution Test | |
|---|---|
| Shapiro-Wilk Test Statisitic | 0.777046 |
| Shapiro-Wilk 5% Critical Value | 0.762 |
| Data are lognormal at 5% significance level | |

| 95% UCLs (Assuming Lognormal Distribution) | |
|---|---|
| 95% H-UCL | 1680.183 |
| 95% Chebyshev (MVUE) UCL | 0.058339 |
| 97.5% Chebyshev (MVUE) UCL | 0.077799 |
| 99% Chebyshev (MVUE) UCL | 0.116024 |

| 95% Non-parametric UCLs | |
|---|---|
| CLT UCL | 0.025642 |
| Adj-CLT UCL (Adjusted for skewness) | 0.028439 |
| Mod-t UCL (Adjusted for skewness) | 0.029822 |
| Jackknife UCL | 0.029385 |
| Standard Bootstrap UCL | N/R |
| Bootstrap-t UCL | N/R |
| Hall's Bootstrap UCL | N/R |
| Percentile Bootstrap UCL | N/R |
| BCA Bootstrap UCL | N/R |
| 95% Chebyshev (Mean, Sd) UCL | 0.046503 |
| 97.5% Chebyshev (Mean, Sd) UCL | 0.060999 |
| 99% Chebyshev (Mean, Sd) UCL | 0.089475 |

Recommended UCL exceeds the maximum observation

Data File Variable: WMACd

| Raw Statistics | |
|---|---|
| Number of Valid Samples | 5 |
| Number of Unique Samples | 1 |
| Minimum | 0.0015 |
| Maximum | 0.0015 |
| Mean | 0.0015 |
| Median | 0.0015 |

Data contains constant observations with no distinct values
There is no need to calculate lognormal statistics

Data File Variable: WMACd

| Raw Statistics | |
|---|---|
| Number of Valid Samples | 5 |
| Number of Unique Samples | 1 |
| Minimum | 0.0015 |
| Maximum | 0.0015 |
| Mean | 0.0015 |
| Median | 0.0015 |

Data contains constant observations with no distinct values
There is no need to calculate lognormal statistics

Data File | Variable: WMAPb

| Raw Statistics | |
|---|---|
| Number of Valid Samples | 5 |
| Number of Unique Samples | 2 |
| Minimum | 0.005 |
| Maximum | 0.016 |
| Mean | 0.0072 |
| Median | 0.005 |
| Standard Deviation | 0.004919 |
| Variance | 2.42E-05 |
| Coefficient of Variation | 0.683243 |
| Skewness | 2.236068 |

| Gamma Statistics | |
|---|---|
| k hat | 3.946463 |
| k star (bias corrected) | 1.711919 |
| Theta hat | 0.001824 |
| Theta star | 0.004206 |
| nu hat | 39.46463 |
| nu star | 17.11919 |
| Approx.Chi Square Value (.05) | 8.756116 |
| Adjusted Level of Significance | 0.0086 |
| Adjusted Chi Square Value | 6.313623 |

| Log-transformed Statistics | |
|---|---|
| Minimum of log data | -5.298317 |
| Maximum of log data | -4.135167 |
| Mean of log data | -5.065687 |
| Standard Deviation of log data | 0.520177 |
| Variance of log data | 0.270584 |

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Recommended UCL exceeds the maximum observation

| Normal Distribution Test | |
|---|---|
| Shapiro-Wilk Test Statisitic | 0.552116 |
| Shapiro-Wilk 5% Critical Value | 0.762 |
| Data not normal at 5% significance level | |

| 95% UCL (Assuming Normal Distribution) | |
|---|---|
| Student's-t UCL | 0.01189 |

| Gamma Distribution Test | |
|---|---|
| A-D Test Statistic | 1.338181 |
| A-D 5% Critical Value | 0.681314 |
| K-S Test Statistic | 0.494853 |
| K-S 5% Critical Value | 0.358502 |
| Data do not follow gamma distribution | |
| at 5% significance level | |

| 95% UCLs (Assuming Gamma Distribution) | |
|---|---|
| Approximate Gamma UCL | 0.014077 |
| Adjusted Gamma UCL | 0.019523 |

| Lognormal Distribution Test | |
|---|---|
| Shapiro-Wilk Test Statisitic | 0.552116 |
| Shapiro-Wilk 5% Critical Value | 0.762 |
| Data not lognormal at 5% significance level | |

| 95% UCLs (Assuming Lognormal Distribution) | |
|---|---|
| 95% H-UCL | 0.015812 |
| 95% Chebyshev (MVUE) UCL | 0.014063 |
| 97.5% Chebyshev (MVUE) UCL | 0.017112 |
| 99% Chebyshev (MVUE) UCL | 0.023101 |

| 95% Non-parametric UCLs | |
|---|---|
| CLT UCL | 0.010819 |
| Adj-CLT UCL (Adjusted for skewness) | 0.013169 |
| Mod-t UCL (Adjusted for skewness) | 0.012257 |
| Jackknife UCL | 0.01189 |
| Standard Bootstrap UCL | N/R |
| Bootstrap-t UCL | N/R |
| Hall's Bootstrap UCL | N/A |
| Percentile Bootstrap UCL | N/R |
| BCA Bootstrap UCL | N/R |
| 95% Chebyshev (Mean, Sd) UCL | 0.01679 |
| 97.5% Chebyshev (Mean, Sd) UCL | 0.020939 |
| 99% Chebyshev (Mean, Sd) UCL | 0.02909 |

Data File | Variable: WMAZn

| Raw Statistics | |
|---|---|
| Number of Valid Samples | 5 |
| Number of Unique Samples | 5 |
| Minimum | 0.026 |
| Maximum | 0.059 |
| Mean | 0.0354 |
| Median | 0.031 |
| Standard Deviation | 0.013465 |
| Variance | 0.000181 |
| Coefficient of Variation | 0.380361 |
| Skewness | 2.015679 |

| Gamma Statistics | |
|---|---|
| k hat | 10.79208 |
| k star (bias corrected) | 4.450164 |
| Theta hat | 0.00328 |
| Theta star | 0.007955 |
| nu hat | 107.9208 |
| nu star | 44.50164 |
| Approx.Chi Square Value (.05) | 30.19844 |
| Adjusted Level of Significance | 0.0086 |
| Adjusted Chi Square Value | 25.1624 |

| Log-transformed Statistics | |
|---|---|
| Minimum of log data | -3.649659 |
| Maximum of log data | -2.830218 |
| Mean of log data | -3.388089 |
| Standard Deviation of log data | 0.325061 |
| Variance of log data | 0.105665 |

RECOMMENDATION

Data follow gamma distribution (0.05)

Use Approximate Gamma UCL

| Normal Distribution Test | |
|---|---|
| Shapiro-Wilk Test Statisitic | 0.738253 |
| Shapiro-Wilk 5% Critical Value | 0.762 |
| Data not normal at 5% significance level | |

| 95% UCL (Assuming Normal Distribution) | |
|---|---|
| Student's-t UCL | 0.048237 |

| Gamma Distribution Test | |
|---|---|
| A-D Test Statistic | 0.648979 |
| A-D 5% Critical Value | 0.678865 |
| K-S Test Statistic | 0.350015 |
| K-S 5% Critical Value | 0.357556 |
| Data follow gamma distribution | |
| at 5% significance level | |

| 95% UCLs (Assuming Gamma Distribution) | |
|---|---|
| Approximate Gamma UCL | 0.052167 |
| Adjusted Gamma UCL | 0.062608 |

| Lognormal Distribution Test | |
|---|---|
| Shapiro-Wilk Test Statisitic | 0.807613 |
| Shapiro-Wilk 5% Critical Value | 0.762 |
| Data are lognormal at 5% significance level | |

| 95% UCLs (Assuming Lognormal Distribution) | |
|---|---|
| 95% H-UCL | 0.053109 |
| 95% Chebyshev (MVUE) UCL | 0.057457 |
| 97.5% Chebyshev (MVUE) UCL | 0.067079 |
| 99% Chebyshev (MVUE) UCL | 0.085979 |

| 95% Non-parametric UCLs | |
|---|---|
| CLT UCL | 0.045305 |
| Adj-CLT UCL (Adjusted for skewness) | 0.051105 |
| Mod-t UCL (Adjusted for skewness) | 0.049142 |
| Jackknife UCL | 0.048237 |
| Standard Bootstrap UCL | 0.044441 |
| Bootstrap-t UCL | 0.07965 |
| Hall's Bootstrap UCL | 0.093577 |
| Percentile Bootstrap UCL | 0.0458 |
| BCA Bootstrap UCL | 0.0472 |
| 95% Chebyshev (Mean, Sd) UCL | 0.061648 |
| 97.5% Chebyshev (Mean, Sd) UCL | 0.073005 |
| 99% Chebyshev (Mean, Sd) UCL | 0.095314 |

Data File Variable: WCHAs

Raw Statistics

| | |
|---|---|
| Number of Valid Samples | 3 |
| Number of Unique Samples | 2 |
| Minimum | 0.0005 |
| Maximum | 0.002 |
| Mean | 0.001 |
| Median | 0.0005 |

Too Few Observations To Calculate UCLs

Data File Variable: WCHCd

Raw Statistics

| | |
|---|---|
| Number of Valid Samples | 3 |
| Number of Unique Samples | 1 |
| Minimum | 0.0015 |
| Maximum | 0.0015 |
| Mean | 0.0015 |
| Median | 0.0015 |

Too Few Observations To Calculate UCLs

Data File Variable: WCHCu

Raw Statistics

| | |
|---|---|
| Number of Valid Samples | 3 |
| Number of Unique Samples | 2 |
| Minimum | 0.019 |
| Maximum | 0.05 |
| Mean | 0.039667 |
| Median | 0.05 |

Too Few Observations To Calculate UCLs

Data File Variable: WCHPb

Raw Statistics

| | |
|---|---|
| Number of Valid Samples | 3 |
| Number of Unique Samples | 1 |
| Minimum | 0.005 |
| Maximum | 0.005 |
| Mean | 0.005 |
| Median | 0.005 |

Too Few Observations To Calculate UCLs

Data File Variable: WCHZn

Raw Statistics

| | |
|---|---|
| Number of Valid Samples | 3 |
| Number of Unique Samples | 3 |
| Minimum | 0.025 |
| Maximum | 0.042 |
| Mean | 0.031333 |
| Median | 0.027 |

Too Few Observations To Calculate UCLs