| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | UCL Statistics for Uncensored Full Data Sets | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | User Selected Options | | | | | | | | | | | |
| 4 | Date/Time of Computation | | | 2/18/2015 1:41:13 PM | | | | | | | | |
| 5 | From File | | | EPC_015Sub_EU09.xls | | | | | | | | |
| 6 | Full Precision | | | OFF | | | | | | | | |
| 7 | Confidence Coefficient | | | 95% | | | | | | | | |
| 8 | Number of Bootstrap Operations | | | 2000 | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | Antimony | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 13 | | | | | | General Statistics | | | | | | |
| 14 | | | | | Total Number of Observations | 12 | | | | Number of Distinct Observations | | 12 |
| 15 | | | | | | | | | | Number of Missing Observations | | 0 |
| 16 | | | | | Minimum | 50.14 | | | | Mean | | 106.7 |
| 17 | | | | | Maximum | 161.4 | | | | Median | | 107.7 |
| 18 | | | | | SD | 30.34 | | | | Std. Error of Mean | | 8.76 |
| 19 | | | | | Coefficient of Variation | 0.284 | | | | Skewness | | 0.0426 |
| 20 | | | | | | | | | | | | |
| 21 | | | | | | Normal GOF Test | | | | | | |
| 22 | | | | | Shapiro Wilk Test Statistic | 0.986 | | | | Shapiro Wilk GOF Test | | |
| 23 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | | Data appear Normal at 5% Significance Level | | |
| 24 | | | | | Lilliefors Test Statistic | 0.107 | | | | Lilliefors GOF Test | | |
| 25 | | | | | 5% Lilliefors Critical Value | 0.256 | | | | Data appear Normal at 5% Significance Level | | |
| 26 | | | | | | Data appear Normal at 5% Significance Level | | | | | | |
| 27 | | | | | | | | | | | | |
| 28 | | | | | | Assuming Normal Distribution | | | | | | |
| 29 | | | | | 95% Normal UCL | | | | | 95% UCLs (Adjusted for Skewness) | | |
| 30 | | | | | 95% Student's-t UCL | 122.4 | | | | 95% Adjusted-CLT UCL (Chen-1995) | | 121.2 |
| 31 | | | | | | | | | | 95% Modified-t UCL (Johnson-1978) | | 122.4 |
| 32 | | | | | | | | | | | | |
| 33 | | | | | | Gamma GOF Test | | | | | | |
| 34 | | | | | A-D Test Statistic | 0.198 | | | | Anderson-Darling Gamma GOF Test | | |
| 35 | | | | | 5% A-D Critical Value | 0.731 | | | | Detected data appear Gamma Distributed at 5% Significance Level | | |
| 36 | | | | | K-S Test Statistic | 0.111 | | | | Kolmogrov-Smirnoff Gamma GOF Test | | |
| 37 | | | | | 5% K-S Critical Value | 0.245 | | | | Detected data appear Gamma Distributed at 5% Significance Level | | |
| 38 | | | | | | Detected data appear Gamma Distributed at 5% Significance Level | | | | | | |
| 39 | | | | | | | | | | | | |
| 40 | | | | | | Gamma Statistics | | | | | | |
| 41 | | | | | k hat (MLE) | 12.29 | | | | k star (bias corrected MLE) | | 9.276 |
| 42 | | | | | Theta hat (MLE) | 8.677 | | | | Theta star (bias corrected MLE) | | 11.5 |
| 43 | | | | | nu hat (MLE) | 295.1 | | | | nu star (bias corrected) | | 222.6 |
| 44 | | | | | MLE Mean (bias corrected) | 106.7 | | | | MLE Sd (bias corrected) | | 35.03 |
| 45 | | | | | | | | | | Approximate Chi Square Value (0.05) | | 189.1 |
| 46 | | | | | Adjusted Level of Significance | 0.029 | | | | Adjusted Chi Square Value | | 184.4 |
| 47 | | | | | | | | | | | | |
| 48 | | | | | | Assuming Gamma Distribution | | | | | | |
| 49 | | | | | 95% Approximate Gamma UCL (use when n>=50)) | 125.6 | | | | 95% Adjusted Gamma UCL (use when n<50) | | 128.8 |
| 50 | | | | | | | | | | | | |
| 51 | | | | | | Lognormal GOF Test | | | | | | |
| 52 | | | | | Shapiro Wilk Test Statistic | 0.949 | | | | Shapiro Wilk Lognormal GOF Test | | |
| 53 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | | Data appear Lognormal at 5% Significance Level | | |
| 54 | | | | | Lilliefors Test Statistic | 0.132 | | | | Lilliefors Lognormal GOF Test | | |
| 55 | | | | | 5% Lilliefors Critical Value | 0.256 | | | | Data appear Lognormal at 5% Significance Level | | |
| 56 | | | | | | Data appear Lognormal at 5% Significance Level | | | | | | |
| 57 | | | | | | | | | | | | |
| 58 | | | | | | Lognormal Statistics | | | | | | |
| 59 | | | | | Minimum of Logged Data | 3.915 | | | | Mean of logged Data | | 4.629 |
| 60 | | | | | Maximum of Logged Data | 5.084 | | | | SD of logged Data | | 0.311 |
| 61 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 62 | **Assuming Lognormal Distribution** | | | | | | | | | | | |
| 63 | | | | | 95% H-UCL | 128.8 | | | | 90% Chebyshev (MVUE) UCL | | 136.1 |
| 64 | | | | | 95% Chebyshev (MVUE) UCL | 149.3 | | | | 97.5% Chebyshev (MVUE) UCL | | 167.6 |
| 65 | | | | | 99% Chebyshev (MVUE) UCL | 203.5 | | | | | | |
| 66 | | | | | | | | | | | | |
| 67 | **Nonparametric Distribution Free UCL Statistics** | | | | | | | | | | | |
| 68 | **Data appear to follow a Discernible Distribution at 5% Significance Level** | | | | | | | | | | | |
| 69 | | | | | | | | | | | | |
| 70 | **Nonparametric Distribution Free UCLs** | | | | | | | | | | | |
| 71 | | | | | 95% CLT UCL | 121.1 | | | | 95% Jackknife UCL | | 122.4 |
| 72 | | | | | 95% Standard Bootstrap UCL | 120.6 | | | | 95% Bootstrap-t UCL | | 122.5 |
| 73 | | | | | 95% Hall's Bootstrap UCL | 123.5 | | | | 95% Percentile Bootstrap UCL | | 120.7 |
| 74 | | | | | 95% BCA Bootstrap UCL | 120.3 | | | | | | |
| 75 | | | | | 90% Chebyshev(Mean, Sd) UCL | 133 | | | | 95% Chebyshev(Mean, Sd) UCL | | 144.9 |
| 76 | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 161.4 | | | | 99% Chebyshev(Mean, Sd) UCL | | 193.8 |
| 77 | | | | | | | | | | | | |
| 78 | **Suggested UCL to Use** | | | | | | | | | | | |
| 79 | | | | | 95% Student's-t UCL | 122.4 | | | | | | |
| 80 | | | | | | | | | | | | |
| 81 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 82 | These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) | | | | | | | | | | | |
| 83 | and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. | | | | | | | | | | | |
| 84 | For additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 85 | | | | | | | | | | | | |
| 86 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 87 | Arsenic | | | | | | | | | | | |
| 88 | | | | | | | | | | | | |
| 89 | | | | | | General Statistics | | | | | | |
| 90 | | | | | Total Number of Observations | 12 | | | | Number of Distinct Observations | | 11 |
| 91 | | | | | | | | | | Number of Missing Observations | | 0 |
| 92 | | | | | Minimum | 5.89 | | | | Mean | | 10.13 |
| 93 | | | | | Maximum | 23.59 | | | | Median | | 9.195 |
| 94 | | | | | SD | 4.747 | | | | Std. Error of Mean | | 1.37 |
| 95 | | | | | Coefficient of Variation | 0.469 | | | | Skewness | | 2.289 |
| 96 | | | | | | | | | | | | |
| 97 | | | | | | Normal GOF Test | | | | | | |
| 98 | | | | | Shapiro Wilk Test Statistic | 0.746 | | | | Shapiro Wilk GOF Test | | |
| 99 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | | Data Not Normal at 5% Significance Level | | |
| 100 | | | | | Lilliefors Test Statistic | 0.261 | | | | Lilliefors GOF Test | | |
| 101 | | | | | 5% Lilliefors Critical Value | 0.256 | | | | Data Not Normal at 5% Significance Level | | |
| 102 | | | | | | Data Not Normal at 5% Significance Level | | | | | | |
| 103 | | | | | | | | | | | | |
| 104 | | | | | | Assuming Normal Distribution | | | | | | |
| 105 | | | | | 95% Normal UCL | | | | | 95% UCLs (Adjusted for Skewness) | | |
| 106 | | | | | 95% Student's-t UCL | 12.59 | | | | 95% Adjusted-CLT UCL (Chen-1995) | | 13.35 |
| 107 | | | | | | | | | | 95% Modified-t UCL (Johnson-1978) | | 12.74 |
| 108 | | | | | | | | | | | | |
| 109 | | | | | | Gamma GOF Test | | | | | | |
| 110 | | | | | A-D Test Statistic | 0.599 | | | | Anderson-Darling Gamma GOF Test | | |
| 111 | | | | | 5% A-D Critical Value | 0.731 | | | | Detected data appear Gamma Distributed at 5% Significance Level | | |
| 112 | | | | | K-S Test Statistic | 0.198 | | | | Kolmogrov-Smirnoff Gamma GOF Test | | |
| 113 | | | | | 5% K-S Critical Value | 0.246 | | | | Detected data appear Gamma Distributed at 5% Significance Level | | |
| 114 | | | | | | Detected data appear Gamma Distributed at 5% Significance Level | | | | | | |
| 115 | | | | | | | | | | | | |
| 116 | | | | | | Gamma Statistics | | | | | | |
| 117 | | | | | k hat (MLE) | 6.851 | | | | k star (bias corrected MLE) | | 5.194 |
| 118 | | | | | Theta hat (MLE) | 1.479 | | | | Theta star (bias corrected MLE) | | 1.95 |
| 119 | | | | | nu hat (MLE) | 164.4 | | | | nu star (bias corrected) | | 124.7 |
| 120 | | | | | MLE Mean (bias corrected) | 10.13 | | | | MLE Sd (bias corrected) | | 4.445 |
| 121 | | | | | | | | | | Approximate Chi Square Value (0.05) | | 99.87 |
| 122 | | | | | Adjusted Level of Significance | 0.029 | | | | Adjusted Chi Square Value | | 96.49 |
| 123 | | | | | | | | | | | | |
| 124 | | | | | | Assuming Gamma Distribution | | | | | | |
| 125 | | | | | 95% Approximate Gamma UCL (use when n>=50) | 12.65 | | | | 95% Adjusted Gamma UCL (use when n<50) | | 13.09 |
| 126 | | | | | | | | | | | | |
| 127 | | | | | | Lognormal GOF Test | | | | | | |
| 128 | | | | | Shapiro Wilk Test Statistic | 0.901 | | | | Shapiro Wilk Lognormal GOF Test | | |
| 129 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | | Data appear Lognormal at 5% Significance Level | | |
| 130 | | | | | Lilliefors Test Statistic | 0.173 | | | | Lilliefors Lognormal GOF Test | | |
| 131 | | | | | 5% Lilliefors Critical Value | 0.256 | | | | Data appear Lognormal at 5% Significance Level | | |
| 132 | | | | | | Data appear Lognormal at 5% Significance Level | | | | | | |
| 133 | | | | | | | | | | | | |
| 134 | | | | | | Lognormal Statistics | | | | | | |
| 135 | | | | | Minimum of Logged Data | 1.773 | | | | Mean of logged Data | | 2.241 |
| 136 | | | | | Maximum of Logged Data | 3.161 | | | | SD of logged Data | | 0.38 |
| 137 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 138 | **Assuming Lognormal Distribution** | | | | | | | | | | | |
| 139 | | | | | 95% H-UCL | 12.71 | | | | 90% Chebyshev (MVUE) UCL | | 13.39 |
| 140 | | | | 95% Chebyshev (MVUE) UCL | | 14.91 | | | | 97.5% Chebyshev (MVUE) UCL | | 17.01 |
| 141 | | | | 99% Chebyshev (MVUE) UCL | | 21.15 | | | | | | |
| 142 | | | | | | | | | | | | |
| 143 | **Nonparametric Distribution Free UCL Statistics** | | | | | | | | | | | |
| 144 | **Data appear to follow a Discernible Distribution at 5% Significance Level** | | | | | | | | | | | |
| 145 | | | | | | | | | | | | |
| 146 | **Nonparametric Distribution Free UCLs** | | | | | | | | | | | |
| 147 | | | | | 95% CLT UCL | 12.38 | | | | 95% Jackknife UCL | | 12.59 |
| 148 | | | | 95% Standard Bootstrap UCL | | 12.28 | | | | 95% Bootstrap-t UCL | | 14.51 |
| 149 | | | | 95% Hall's Bootstrap UCL | | 22.21 | | | | 95% Percentile Bootstrap UCL | | 12.54 |
| 150 | | | | 95% BCA Bootstrap UCL | | 13.57 | | | | | | |
| 151 | | | | 90% Chebyshev(Mean, Sd) UCL | | 14.24 | | | | 95% Chebyshev(Mean, Sd) UCL | | 16.1 |
| 152 | | | | 97.5% Chebyshev(Mean, Sd) UCL | | 18.69 | | | | 99% Chebyshev(Mean, Sd) UCL | | 23.77 |
| 153 | | | | | | | | | | | | |
| 154 | **Suggested UCL to Use** | | | | | | | | | | | |
| 155 | | | | 95% Adjusted Gamma UCL | | 13.09 | | | | | | |
| 156 | | | | | | | | | | | | |
| 157 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 158 | These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) | | | | | | | | | | | |
| 159 | and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. | | | | | | | | | | | |
| 160 | For additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 161 | | | | | | | | | | | | |
| 162 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 163 | Cadmium | | | | | | | | | | | |
| 164 | | | | | | | | | | | | |
| 165 | | | | | General Statistics | | | | | | | |
| 166 | | | | | Total Number of Observations | 12 | | | | Number of Distinct Observations | | 5 |
| 167 | | | | | | | | | | Number of Missing Observations | | 0 |
| 168 | | | | | Minimum | 0.026 | | | | Mean | | 11.13 |
| 169 | | | | | Maximum | 21.56 | | | | Median | | 12 |
| 170 | | | | | SD | 5.899 | | | | Std. Error of Mean | | 1.703 |
| 171 | | | | | Coefficient of Variation | 0.53 | | | | Skewness | | -0.782 |
| 172 | | | | | | | | | | | | |
| 173 | | | | | Normal GOF Test | | | | | | | |
| 174 | | | | | Shapiro Wilk Test Statistic | 0.759 | | | | Shapiro Wilk GOF Test | | |
| 175 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | | Data Not Normal at 5% Significance Level | | |
| 176 | | | | | Lilliefors Test Statistic | 0.392 | | | | Lilliefors GOF Test | | |
| 177 | | | | | 5% Lilliefors Critical Value | 0.256 | | | | Data Not Normal at 5% Significance Level | | |
| 178 | | | | | Data Not Normal at 5% Significance Level | | | | | | | |
| 179 | | | | | | | | | | | | |
| 180 | | | | | Assuming Normal Distribution | | | | | | | |
| 181 | | | | | 95% Normal UCL | | | | | 95% UCLs (Adjusted for Skewness) | | |
| 182 | | | | | 95% Student's-t UCL | 14.18 | | | | 95% Adjusted-CLT UCL (Chen-1995) | | 13.52 |
| 183 | | | | | | | | | | 95% Modified-t UCL (Johnson-1978) | | 14.12 |
| 184 | | | | | | | | | | | | |
| 185 | | | | | Gamma GOF Test | | | | | | | |
| 186 | | | | | A-D Test Statistic | 2.871 | | | | Anderson-Darling Gamma GOF Test | | |
| 187 | | | | | 5% A-D Critical Value | 0.765 | | | | Data Not Gamma Distributed at 5% Significance Level | | |
| 188 | | | | | K-S Test Statistic | 0.508 | | | | Kolmogrov-Smirnoff Gamma GOF Test | | |
| 189 | | | | | 5% K-S Critical Value | 0.255 | | | | Data Not Gamma Distributed at 5% Significance Level | | |
| 190 | | | | | Data Not Gamma Distributed at 5% Significance Level | | | | | | | |
| 191 | | | | | | | | | | | | |
| 192 | | | | | Gamma Statistics | | | | | | | |
| 193 | | | | | k hat (MLE) | 0.76 | | | | k star (bias corrected MLE) | | 0.625 |
| 194 | | | | | Theta hat (MLE) | 14.64 | | | | Theta star (bias corrected MLE) | | 17.79 |
| 195 | | | | | nu hat (MLE) | 18.23 | | | | nu star (bias corrected) | | 15.01 |
| 196 | | | | | MLE Mean (bias corrected) | 11.13 | | | | MLE Sd (bias corrected) | | 14.07 |
| 197 | | | | | | | | | | Approximate Chi Square Value (0.05) | | 7.268 |
| 198 | | | | | Adjusted Level of Significance | 0.029 | | | | Adjusted Chi Square Value | | 6.463 |
| 199 | | | | | | | | | | | | |
| 200 | | | | | Assuming Gamma Distribution | | | | | | | |
| 201 | | | | | 95% Approximate Gamma UCL (use when n>=50)) | 22.98 | | | | 95% Adjusted Gamma UCL (use when n<50) | | 25.84 |
| 202 | | | | | | | | | | | | |
| 203 | | | | | Lognormal GOF Test | | | | | | | |
| 204 | | | | | Shapiro Wilk Test Statistic | 0.543 | | | | Shapiro Wilk Lognormal GOF Test | | |
| 205 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | | Data Not Lognormal at 5% Significance Level | | |
| 206 | | | | | Lilliefors Test Statistic | 0.484 | | | | Lilliefors Lognormal GOF Test | | |
| 207 | | | | | 5% Lilliefors Critical Value | 0.256 | | | | Data Not Lognormal at 5% Significance Level | | |
| 208 | | | | | Data Not Lognormal at 5% Significance Level | | | | | | | |
| 209 | | | | | | | | | | | | |
| 210 | | | | | Lognormal Statistics | | | | | | | |
| 211 | | | | | Minimum of Logged Data | -3.65 | | | | Mean of logged Data | | 1.623 |
| 212 | | | | | Maximum of Logged Data | 3.071 | | | | SD of logged Data | | 2.234 |
| 213 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 214 | **Assuming Lognormal Distribution** | | | | | | | | | | | |
| 215 | | | | | 95% H-UCL | 2454 | | | | 90% Chebyshev (MVUE) UCL | | 113.9 |
| 216 | | | | 95% Chebyshev (MVUE) UCL | | 148.6 | | | | 97.5% Chebyshev (MVUE) UCL | | 196.8 |
| 217 | | | | 99% Chebyshev (MVUE) UCL | | 291.5 | | | | | | |
| 218 | | | | | | | | | | | | |
| 219 | **Nonparametric Distribution Free UCL Statistics** | | | | | | | | | | | |
| 220 | **Data do not follow a Discernible Distribution (0.05)** | | | | | | | | | | | |
| 221 | | | | | | | | | | | | |
| 222 | **Nonparametric Distribution Free UCLs** | | | | | | | | | | | |
| 223 | | | | | 95% CLT UCL | 13.93 | | | | 95% Jackknife UCL | | 14.18 |
| 224 | | | | 95% Standard Bootstrap UCL | | 13.83 | | | | 95% Bootstrap-t UCL | | 13.44 |
| 225 | | | | 95% Hall's Bootstrap UCL | | 13.73 | | | | 95% Percentile Bootstrap UCL | | 13.72 |
| 226 | | | | 95% BCA Bootstrap UCL | | 13.52 | | | | | | |
| 227 | | | | 90% Chebyshev(Mean, Sd) UCL | | 16.24 | | | | 95% Chebyshev(Mean, Sd) UCL | | 18.55 |
| 228 | | | | 97.5% Chebyshev(Mean, Sd) UCL | | 21.76 | | | | 99% Chebyshev(Mean, Sd) UCL | | 28.07 |
| 229 | | | | | | | | | | | | |
| 230 | **Suggested UCL to Use** | | | | | | | | | | | |
| 231 | | | | 99% Chebyshev (Mean, Sd) UCL | | 28.07 | | | | | | |
| 232 | | | | | | | | | | | | |
| 233 | **Recommended UCL exceeds the maximum observation** | | | | | | | | | | | |
| 234 | | | | | | | | | | | | |
| 235 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 236 | These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) | | | | | | | | | | | |
| 237 | and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. | | | | | | | | | | | |
| 238 | For additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 239 | | | | | | | | | | | | |
| 240 | **Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be** | | | | | | | | | | | |
| 241 | **reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.** | | | | | | | | | | | |
| 242 | | | | | | | | | | | | |
| 243 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 244 | Chromium | | | | | | | | | | | |
| 245 | | | | | | | | | | | | |
| 246 | | | | | General Statistics | | | | | | | |
| 247 | | | | | Total Number of Observations | 12 | | | Number of Distinct Observations | | | 7 |
| 248 | | | | | | | | | Number of Missing Observations | | | 0 |
| 249 | | | | | Minimum | 37.69 | | | Mean | | | 74.94 |
| 250 | | | | | Maximum | 140.6 | | | Median | | | 85 |
| 251 | | | | | SD | 27.58 | | | Std. Error of Mean | | | 7.96 |
| 252 | | | | | Coefficient of Variation | 0.368 | | | Skewness | | | 0.974 |
| 253 | | | | | | | | | | | | |
| 254 | | | | | Normal GOF Test | | | | | | | |
| 255 | | | | | Shapiro Wilk Test Statistic | 0.852 | | | Shapiro Wilk GOF Test | | | |
| 256 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | Data Not Normal at 5% Significance Level | | | |
| 257 | | | | | Lilliefors Test Statistic | 0.274 | | | Lilliefors GOF Test | | | |
| 258 | | | | | 5% Lilliefors Critical Value | 0.256 | | | Data Not Normal at 5% Significance Level | | | |
| 259 | | | | | Data Not Normal at 5% Significance Level | | | | | | | |
| 260 | | | | | | | | | | | | |
| 261 | | | | | Assuming Normal Distribution | | | | | | | |
| 262 | | | | | 95% Normal UCL | | | | 95% UCLs (Adjusted for Skewness) | | | |
| 263 | | | | | 95% Student's-t UCL | 89.23 | | | 95% Adjusted-CLT UCL (Chen-1995) | | | 90.42 |
| 264 | | | | | | | | | 95% Modified-t UCL (Johnson-1978) | | | 89.61 |
| 265 | | | | | | | | | | | | |
| 266 | | | | | Gamma GOF Test | | | | | | | |
| 267 | | | | | A-D Test Statistic | 0.747 | | | Anderson-Darling Gamma GOF Test | | | |
| 268 | | | | | 5% A-D Critical Value | 0.731 | | | Data Not Gamma Distributed at 5% Significance Level | | | |
| 269 | | | | | K-S Test Statistic | 0.271 | | | Kolmogrov-Smirnoff Gamma GOF Test | | | |
| 270 | | | | | 5% K-S Critical Value | 0.246 | | | Data Not Gamma Distributed at 5% Significance Level | | | |
| 271 | | | | | Data Not Gamma Distributed at 5% Significance Level | | | | | | | |
| 272 | | | | | | | | | | | | |
| 273 | | | | | Gamma Statistics | | | | | | | |
| 274 | | | | | k hat (MLE) | 8.455 | | | k star (bias corrected MLE) | | | 6.397 |
| 275 | | | | | Theta hat (MLE) | 8.863 | | | Theta star (bias corrected MLE) | | | 11.71 |
| 276 | | | | | nu hat (MLE) | 202.9 | | | nu star (bias corrected) | | | 153.5 |
| 277 | | | | | MLE Mean (bias corrected) | 74.94 | | | MLE Sd (bias corrected) | | | 29.63 |
| 278 | | | | | | | | | Approximate Chi Square Value (0.05) | | | 125.9 |
| 279 | | | | | Adjusted Level of Significance | 0.029 | | | Adjusted Chi Square Value | | | 122.1 |
| 280 | | | | | | | | | | | | |
| 281 | | | | | Assuming Gamma Distribution | | | | | | | |
| 282 | | | | | 95% Approximate Gamma UCL (use when n>=50)) | 91.39 | | | 95% Adjusted Gamma UCL (use when n<50) | | | 94.25 |
| 283 | | | | | | | | | | | | |
| 284 | | | | | Lognormal GOF Test | | | | | | | |
| 285 | | | | | Shapiro Wilk Test Statistic | 0.902 | | | Shapiro Wilk Lognormal GOF Test | | | |
| 286 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | Data appear Lognormal at 5% Significance Level | | | |
| 287 | | | | | Lilliefors Test Statistic | 0.279 | | | Lilliefors Lognormal GOF Test | | | |
| 288 | | | | | 5% Lilliefors Critical Value | 0.256 | | | Data Not Lognormal at 5% Significance Level | | | |
| 289 | | | | | Data appear Approximate Lognormal at 5% Significance Level | | | | | | | |
| 290 | | | | | | | | | | | | |
| 291 | | | | | Lognormal Statistics | | | | | | | |
| 292 | | | | | Minimum of Logged Data | 3.629 | | | Mean of logged Data | | | 4.256 |
| 293 | | | | | Maximum of Logged Data | 4.946 | | | SD of logged Data | | | 0.364 |
| 294 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 295 | **Assuming Lognormal Distribution** | | | | | | | | | | | |
| 296 | | | | | 95% H-UCL | 93.79 | | | | 90% Chebyshev (MVUE) UCL | | 98.9 |
| 297 | | | | 95% Chebyshev (MVUE) UCL | | 109.7 | | | | 97.5% Chebyshev (MVUE) UCL | | 124.8 |
| 298 | | | | 99% Chebyshev (MVUE) UCL | | 154.4 | | | | | | |
| 299 | | | | | | | | | | | | |
| 300 | **Nonparametric Distribution Free UCL Statistics** | | | | | | | | | | | |
| 301 | **Data appear to follow a Discernible Distribution at 5% Significance Level** | | | | | | | | | | | |
| 302 | | | | | | | | | | | | |
| 303 | **Nonparametric Distribution Free UCLs** | | | | | | | | | | | |
| 304 | | | | | 95% CLT UCL | 88.03 | | | | 95% Jackknife UCL | | 89.23 |
| 305 | | | | 95% Standard Bootstrap UCL | | 87.49 | | | | 95% Bootstrap-t UCL | | 91.06 |
| 306 | | | | 95% Hall's Bootstrap UCL | | 96.34 | | | | 95% Percentile Bootstrap UCL | | 88.3 |
| 307 | | | | 95% BCA Bootstrap UCL | | 89.56 | | | | | | |
| 308 | | | | 90% Chebyshev(Mean, Sd) UCL | | 98.82 | | | | 95% Chebyshev(Mean, Sd) UCL | | 109.6 |
| 309 | | | | 97.5% Chebyshev(Mean, Sd) UCL | | 124.7 | | | | 99% Chebyshev(Mean, Sd) UCL | | 154.1 |
| 310 | | | | | | | | | | | | |
| 311 | **Suggested UCL to Use** | | | | | | | | | | | |
| 312 | | | | 95% Student's-t UCL | | 89.23 | | | | or 95% Modified-t UCL | | 89.61 |
| 313 | | | | | | | | | | | | |
| 314 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 315 | These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) | | | | | | | | | | | |
| 316 | and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. | | | | | | | | | | | |
| 317 | For additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 318 | | | | | | | | | | | | |
| 319 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 320 | Iron | | | | | | | | | | | |
| 321 | | | | | | | | | | | | |
| 322 | | | | | General Statistics | | | | | | | |
| 323 | | | | | Total Number of Observations | 12 | | | | Number of Distinct Observations | | 12 |
| 324 | | | | | | | | | | Number of Missing Observations | | 0 |
| 325 | | | | | Minimum | 9781 | | | | Mean | | 25381 |
| 326 | | | | | Maximum | 42172 | | | | Median | | 23105 |
| 327 | | | | | SD | 9288 | | | | Std. Error of Mean | | 2681 |
| 328 | | | | | Coefficient of Variation | 0.366 | | | | Skewness | | 0.133 |
| 329 | | | | | | | | | | | | |
| 330 | | | | | Normal GOF Test | | | | | | | |
| 331 | | | | | Shapiro Wilk Test Statistic | 0.969 | | | | Shapiro Wilk GOF Test | | |
| 332 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | | Data appear Normal at 5% Significance Level | | |
| 333 | | | | | Lilliefors Test Statistic | 0.162 | | | | Lilliefors GOF Test | | |
| 334 | | | | | 5% Lilliefors Critical Value | 0.256 | | | | Data appear Normal at 5% Significance Level | | |
| 335 | | | | | Data appear Normal at 5% Significance Level | | | | | | | |
| 336 | | | | | | | | | | | | |
| 337 | | | | | Assuming Normal Distribution | | | | | | | |
| 338 | | | | | 95% Normal UCL | | | | | 95% UCLs (Adjusted for Skewness) | | |
| 339 | | | | | 95% Student's-t UCL | 30196 | | | | 95% Adjusted-CLT UCL (Chen-1995) | | 29901 |
| 340 | | | | | | | | | | 95% Modified-t UCL (Johnson-1978) | | 30213 |
| 341 | | | | | | | | | | | | |
| 342 | | | | | Gamma GOF Test | | | | | | | |
| 343 | | | | | A-D Test Statistic | 0.285 | | | | Anderson-Darling Gamma GOF Test | | |
| 344 | | | | | 5% A-D Critical Value | 0.731 | | | | Detected data appear Gamma Distributed at 5% Significance Level | | |
| 345 | | | | | K-S Test Statistic | 0.183 | | | | Kolmogrov-Smirnoff Gamma GOF Test | | |
| 346 | | | | | 5% K-S Critical Value | 0.246 | | | | Detected data appear Gamma Distributed at 5% Significance Level | | |
| 347 | | | | | Detected data appear Gamma Distributed at 5% Significance Level | | | | | | | |
| 348 | | | | | | | | | | | | |
| 349 | | | | | Gamma Statistics | | | | | | | |
| 350 | | | | | k hat (MLE) | 7.311 | | | | k star (bias corrected MLE) | | 5.539 |
| 351 | | | | | Theta hat (MLE) | 3471 | | | | Theta star (bias corrected MLE) | | 4582 |
| 352 | | | | | nu hat (MLE) | 175.5 | | | | nu star (bias corrected) | | 132.9 |
| 353 | | | | | MLE Mean (bias corrected) | 25381 | | | | MLE Sd (bias corrected) | | 10784 |
| 354 | | | | | | | | | | Approximate Chi Square Value (0.05) | | 107.3 |
| 355 | | | | | Adjusted Level of Significance | 0.029 | | | | Adjusted Chi Square Value | | 103.8 |
| 356 | | | | | | | | | | | | |
| 357 | | | | | Assuming Gamma Distribution | | | | | | | |
| 358 | | | | | 95% Approximate Gamma UCL (use when n>=50)) | 31445 | | | | 95% Adjusted Gamma UCL (use when n<50) | | 32509 |
| 359 | | | | | | | | | | | | |
| 360 | | | | | Lognormal GOF Test | | | | | | | |
| 361 | | | | | Shapiro Wilk Test Statistic | 0.944 | | | | Shapiro Wilk Lognormal GOF Test | | |
| 362 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | | Data appear Lognormal at 5% Significance Level | | |
| 363 | | | | | Lilliefors Test Statistic | 0.175 | | | | Lilliefors Lognormal GOF Test | | |
| 364 | | | | | 5% Lilliefors Critical Value | 0.256 | | | | Data appear Lognormal at 5% Significance Level | | |
| 365 | | | | | Data appear Lognormal at 5% Significance Level | | | | | | | |
| 366 | | | | | | | | | | | | |
| 367 | | | | | Lognormal Statistics | | | | | | | |
| 368 | | | | | Minimum of Logged Data | 9.188 | | | | Mean of logged Data | | 10.07 |
| 369 | | | | | Maximum of Logged Data | 10.65 | | | | SD of logged Data | | 0.408 |
| 370 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 371 | Assuming Lognormal Distribution | | | | | | | | | | | |
| 372 | | | | | 95% H-UCL | 33046 | | | | 90% Chebyshev (MVUE) UCL | | 34710 |
| 373 | | | | | 95% Chebyshev (MVUE) UCL | 38866 | | | | 97.5% Chebyshev (MVUE) UCL | | 44635 |
| 374 | | | | | 99% Chebyshev (MVUE) UCL | 55967 | | | | | | |
| 375 | | | | | | | | | | | | |
| 376 | Nonparametric Distribution Free UCL Statistics | | | | | | | | | | | |
| 377 | Data appear to follow a Discernible Distribution at 5% Significance Level | | | | | | | | | | | |
| 378 | | | | | | | | | | | | |
| 379 | Nonparametric Distribution Free UCLs | | | | | | | | | | | |
| 380 | | | | | 95% CLT UCL | 29791 | | | | 95% Jackknife UCL | | 30196 |
| 381 | | | | | 95% Standard Bootstrap UCL | 29641 | | | | 95% Bootstrap-t UCL | | 30483 |
| 382 | | | | | 95% Hall's Bootstrap UCL | 30057 | | | | 95% Percentile Bootstrap UCL | | 29453 |
| 383 | | | | | 95% BCA Bootstrap UCL | 29774 | | | | | | |
| 384 | | | | | 90% Chebyshev(Mean, Sd) UCL | 33424 | | | | 95% Chebyshev(Mean, Sd) UCL | | 37068 |
| 385 | | | | | 97.5% Chebyshev(Mean, Sd) UCL | 42125 | | | | 99% Chebyshev(Mean, Sd) UCL | | 52058 |
| 386 | | | | | | | | | | | | |
| 387 | Suggested UCL to Use | | | | | | | | | | | |
| 388 | | | | | 95% Student's-t UCL | 30196 | | | | | | |
| 389 | | | | | | | | | | | | |
| 390 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 391 | These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) | | | | | | | | | | | |
| 392 | and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. | | | | | | | | | | | |
| 393 | For additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 394 | | | | | | | | | | | | |
| 395 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 396 | Manganese | | | | | | | | | | | |
| 397 | | | | | | | | | | | | |
| 398 | | | | | General Statistics | | | | | | | |
| 399 | | | | | Total Number of Observations | 12 | | | | Number of Distinct Observations | | 12 |
| 400 | | | | | | | | | | Number of Missing Observations | | 0 |
| 401 | | | | | Minimum | 365.4 | | | | Mean | | 760.8 |
| 402 | | | | | Maximum | 2717 | | | | Median | | 538.2 |
| 403 | | | | | SD | 639.6 | | | | Std. Error of Mean | | 184.6 |
| 404 | | | | | Coefficient of Variation | 0.841 | | | | Skewness | | 3.032 |
| 405 | | | | | | | | | | | | |
| 406 | | | | | Normal GOF Test | | | | | | | |
| 407 | | | | | Shapiro Wilk Test Statistic | 0.567 | | | | Shapiro Wilk GOF Test | | |
| 408 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | | Data Not Normal at 5% Significance Level | | |
| 409 | | | | | Lilliefors Test Statistic | 0.356 | | | | Lilliefors GOF Test | | |
| 410 | | | | | 5% Lilliefors Critical Value | 0.256 | | | | Data Not Normal at 5% Significance Level | | |
| 411 | | | | | Data Not Normal at 5% Significance Level | | | | | | | |
| 412 | | | | | | | | | | | | |
| 413 | | | | | Assuming Normal Distribution | | | | | | | |
| 414 | | | | | 95% Normal UCL | | | | | 95% UCLs (Adjusted for Skewness) | | |
| 415 | | | | | 95% Student's-t UCL | 1092 | | | | 95% Adjusted-CLT UCL (Chen-1995) | | 1237 |
| 416 | | | | | | | | | | 95% Modified-t UCL (Johnson-1978) | | 1119 |
| 417 | | | | | | | | | | | | |
| 418 | | | | | Gamma GOF Test | | | | | | | |
| 419 | | | | | A-D Test Statistic | 1.231 | | | | Anderson-Darling Gamma GOF Test | | |
| 420 | | | | | 5% A-D Critical Value | 0.739 | | | | Data Not Gamma Distributed at 5% Significance Level | | |
| 421 | | | | | K-S Test Statistic | 0.259 | | | | Kolmogrov-Smirnoff Gamma GOF Test | | |
| 422 | | | | | 5% K-S Critical Value | 0.247 | | | | Data Not Gamma Distributed at 5% Significance Level | | |
| 423 | | | | | Data Not Gamma Distributed at 5% Significance Level | | | | | | | |
| 424 | | | | | | | | | | | | |
| 425 | | | | | Gamma Statistics | | | | | | | |
| 426 | | | | | k hat (MLE) | 2.98 | | | | k star (bias corrected MLE) | | 2.291 |
| 427 | | | | | Theta hat (MLE) | 255.3 | | | | Theta star (bias corrected MLE) | | 332.1 |
| 428 | | | | | nu hat (MLE) | 71.52 | | | | nu star (bias corrected) | | 54.97 |
| 429 | | | | | MLE Mean (bias corrected) | 760.8 | | | | MLE Sd (bias corrected) | | 502.7 |
| 430 | | | | | | | | | | Approximate Chi Square Value (0.05) | | 38.94 |
| 431 | | | | | Adjusted Level of Significance | 0.029 | | | | Adjusted Chi Square Value | | 36.88 |
| 432 | | | | | | | | | | | | |
| 433 | | | | | Assuming Gamma Distribution | | | | | | | |
| 434 | | | | | 95% Approximate Gamma UCL (use when n>=50)) | 1074 | | | | 95% Adjusted Gamma UCL (use when n<50) | | 1134 |
| 435 | | | | | | | | | | | | |
| 436 | | | | | Lognormal GOF Test | | | | | | | |
| 437 | | | | | Shapiro Wilk Test Statistic | 0.801 | | | | Shapiro Wilk Lognormal GOF Test | | |
| 438 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | | Data Not Lognormal at 5% Significance Level | | |
| 439 | | | | | Lilliefors Test Statistic | 0.208 | | | | Lilliefors Lognormal GOF Test | | |
| 440 | | | | | 5% Lilliefors Critical Value | 0.256 | | | | Data appear Lognormal at 5% Significance Level | | |
| 441 | | | | | Data appear Approximate Lognormal at 5% Significance Level | | | | | | | |
| 442 | | | | | | | | | | | | |
| 443 | | | | | Lognormal Statistics | | | | | | | |
| 444 | | | | | Minimum of Logged Data | 5.901 | | | | Mean of logged Data | | 6.457 |
| 445 | | | | | Maximum of Logged Data | 7.907 | | | | SD of logged Data | | 0.541 |
| 446 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 447 | **Assuming Lognormal Distribution** | | | | | | | | | | | |
| 448 | | | | | 95% H-UCL | 1055 | | | 90% Chebyshev (MVUE) UCL | | | 1078 |
| 449 | | | | 95% Chebyshev (MVUE) UCL | | 1237 | | | 97.5% Chebyshev (MVUE) UCL | | | 1457 |
| 450 | | | | 99% Chebyshev (MVUE) UCL | | 1890 | | | | | | |
| 451 | | | | | | | | | | | | |
| 452 | **Nonparametric Distribution Free UCL Statistics** | | | | | | | | | | | |
| 453 | **Data appear to follow a Discernible Distribution at 5% Significance Level** | | | | | | | | | | | |
| 454 | | | | | | | | | | | | |
| 455 | **Nonparametric Distribution Free UCLs** | | | | | | | | | | | |
| 456 | | | | | 95% CLT UCL | 1064 | | | 95% Jackknife UCL | | | 1092 |
| 457 | | | | 95% Standard Bootstrap UCL | | 1048 | | | 95% Bootstrap-t UCL | | | 1728 |
| 458 | | | | 95% Hall's Bootstrap UCL | | 2182 | | | 95% Percentile Bootstrap UCL | | | 1110 |
| 459 | | | | 95% BCA Bootstrap UCL | | 1271 | | | | | | |
| 460 | | | | 90% Chebyshev(Mean, Sd) UCL | | 1315 | | | 95% Chebyshev(Mean, Sd) UCL | | | 1566 |
| 461 | | | | 97.5% Chebyshev(Mean, Sd) UCL | | 1914 | | | 99% Chebyshev(Mean, Sd) UCL | | | 2598 |
| 462 | | | | | | | | | | | | |
| 463 | **Suggested UCL to Use** | | | | | | | | | | | |
| 464 | | | | 95% Chebyshev (Mean, Sd) UCL | | 1566 | | | | | | |
| 465 | | | | | | | | | | | | |
| 466 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 467 | These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) | | | | | | | | | | | |
| 468 | and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. | | | | | | | | | | | |
| 469 | For additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 470 | | | | | | | | | | | | |
| 471 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 472 | Mercury | | | | | | | | | | | |
| 473 | | | | | | | | | | | | |
| 474 | | | | | General Statistics | | | | | | | |
| 475 | | | | | Total Number of Observations | 12 | | | | Number of Distinct Observations | | 3 |
| 476 | | | | | | | | | | Number of Missing Observations | | 0 |
| 477 | | | | | Minimum | 0.0196 | | | | Mean | | 8.88 |
| 478 | | | | | Maximum | 10 | | | | Median | | 10 |
| 479 | | | | | SD | 2.962 | | | | Std. Error of Mean | | 0.855 |
| 480 | | | | | Coefficient of Variation | 0.334 | | | | Skewness | | -2.914 |
| 481 | | | | | | | | | | | | |
| 482 | | | | | Normal GOF Test | | | | | | | |
| 483 | | | | | Shapiro Wilk Test Statistic | 0.453 | | | | Shapiro Wilk GOF Test | | |
| 484 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | | Data Not Normal at 5% Significance Level | | |
| 485 | | | | | Lilliefors Test Statistic | 0.481 | | | | Lilliefors GOF Test | | |
| 486 | | | | | 5% Lilliefors Critical Value | 0.256 | | | | Data Not Normal at 5% Significance Level | | |
| 487 | | | | | Data Not Normal at 5% Significance Level | | | | | | | |
| 488 | | | | | | | | | | | | |
| 489 | | | | | Assuming Normal Distribution | | | | | | | |
| 490 | | | | | 95% Normal UCL | | | | | 95% UCLs (Adjusted for Skewness) | | |
| 491 | | | | | 95% Student's-t UCL | 10.42 | | | | 95% Adjusted-CLT UCL (Chen-1995) | | 9.518 |
| 492 | | | | | | | | | | 95% Modified-t UCL (Johnson-1978) | | 10.3 |
| 493 | | | | | | | | | | | | |
| 494 | | | | | Gamma GOF Test | | | | | | | |
| 495 | | | | | A-D Test Statistic | 3.886 | | | | Anderson-Darling Gamma GOF Test | | |
| 496 | | | | | 5% A-D Critical Value | 0.75 | | | | Data Not Gamma Distributed at 5% Significance Level | | |
| 497 | | | | | K-S Test Statistic | 0.5 | | | | Kolmogrov-Smirnoff Gamma GOF Test | | |
| 498 | | | | | 5% K-S Critical Value | 0.251 | | | | Data Not Gamma Distributed at 5% Significance Level | | |
| 499 | | | | | Data Not Gamma Distributed at 5% Significance Level | | | | | | | |
| 500 | | | | | | | | | | | | |
| 501 | | | | | Gamma Statistics | | | | | | | |
| 502 | | | | | k hat (MLE) | 1.287 | | | | k star (bias corrected MLE) | | 1.021 |
| 503 | | | | | Theta hat (MLE) | 6.897 | | | | Theta star (bias corrected MLE) | | 8.696 |
| 504 | | | | | nu hat (MLE) | 30.9 | | | | nu star (bias corrected) | | 24.51 |
| 505 | | | | | MLE Mean (bias corrected) | 8.88 | | | | MLE Sd (bias corrected) | | 8.787 |
| 506 | | | | | | | | | | Approximate Chi Square Value (0.05) | | 14.24 |
| 507 | | | | | Adjusted Level of Significance | 0.029 | | | | Adjusted Chi Square Value | | 13.05 |
| 508 | | | | | | | | | | | | |
| 509 | | | | | Assuming Gamma Distribution | | | | | | | |
| 510 | | | | | 95% Approximate Gamma UCL (use when n>=50)) | 15.29 | | | | 95% Adjusted Gamma UCL (use when n<50) | | 16.67 |
| 511 | | | | | | | | | | | | |
| 512 | | | | | Lognormal GOF Test | | | | | | | |
| 513 | | | | | Shapiro Wilk Test Statistic | 0.357 | | | | Shapiro Wilk Lognormal GOF Test | | |
| 514 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | | Data Not Lognormal at 5% Significance Level | | |
| 515 | | | | | Lilliefors Test Statistic | 0.455 | | | | Lilliefors Lognormal GOF Test | | |
| 516 | | | | | 5% Lilliefors Critical Value | 0.256 | | | | Data Not Lognormal at 5% Significance Level | | |
| 517 | | | | | Data Not Lognormal at 5% Significance Level | | | | | | | |
| 518 | | | | | | | | | | | | |
| 519 | | | | | Lognormal Statistics | | | | | | | |
| 520 | | | | | Minimum of Logged Data | -3.932 | | | | Mean of logged Data | | 1.748 |
| 521 | | | | | Maximum of Logged Data | 2.303 | | | | SD of logged Data | | 1.793 |
| 522 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 523 | | | | | Assuming Lognormal Distribution | | | | | | | |
| 524 | | | | | 95% H-UCL | 328.5 | | | | 90% Chebyshev (MVUE) UCL | | 59.08 |
| 525 | | | | 95% Chebyshev (MVUE) UCL | | 75.92 | | | | 97.5% Chebyshev (MVUE) UCL | | 99.29 |
| 526 | | | | 99% Chebyshev (MVUE) UCL | | 145.2 | | | | | | |
| 527 | | | | | | | | | | | | |
| 528 | | | | | Nonparametric Distribution Free UCL Statistics | | | | | | | |
| 529 | | | | | Data do not follow a Discernible Distribution (0.05) | | | | | | | |
| 530 | | | | | | | | | | | | |
| 531 | | | | | Nonparametric Distribution Free UCLs | | | | | | | |
| 532 | | | | | 95% CLT UCL | 10.29 | | | | 95% Jackknife UCL | | 10.42 |
| 533 | | | | 95% Standard Bootstrap UCL | | N/A | | | | 95% Bootstrap-t UCL | | N/A |
| 534 | | | | 95% Hall's Bootstrap UCL | | N/A | | | | 95% Percentile Bootstrap UCL | | N/A |
| 535 | | | | 95% BCA Bootstrap UCL | | N/A | | | | | | |
| 536 | | | | 90% Chebyshev(Mean, Sd) UCL | | 11.45 | | | | 95% Chebyshev(Mean, Sd) UCL | | 12.61 |
| 537 | | | | 97.5% Chebyshev(Mean, Sd) UCL | | 14.22 | | | | 99% Chebyshev(Mean, Sd) UCL | | 17.39 |
| 538 | | | | | | | | | | | | |
| 539 | | | | | Suggested UCL to Use | | | | | | | |
| 540 | | | | 99% Chebyshev (Mean, Sd) UCL | | 17.39 | | | | | | |
| 541 | | | | | | | | | | | | |
| 542 | | | | | Recommended UCL exceeds the maximum observation | | | | | | | |
| 543 | | | | | | | | | | | | |
| 544 | | | | | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | |
| 545 | | | | | These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) | | | | | | | |
| 546 | | | | | and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. | | | | | | | |
| 547 | | | | | For additional insight the user may want to consult a statistician. | | | | | | | |
| 548 | | | | | | | | | | | | |
| 549 | | | | | Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be | | | | | | | |
| 550 | | | | | reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets. | | | | | | | |
| 551 | | | | | | | | | | | | |
| 552 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 553 | Nickel | | | | | | | | | | | |
| 554 | | | | | | | | | | | | |
| 555 | | | | | General Statistics | | | | | | | |
| 556 | | | | | Total Number of Observations | 12 | | | | Number of Distinct Observations | | 11 |
| 557 | | | | | | | | | | Number of Missing Observations | | 0 |
| 558 | | | | | Minimum | 65 | | | | Mean | | 121.7 |
| 559 | | | | | Maximum | 208.3 | | | | Median | | 111.7 |
| 560 | | | | | SD | 53.17 | | | | Std. Error of Mean | | 15.35 |
| 561 | | | | | Coefficient of Variation | 0.437 | | | | Skewness | | 0.525 |
| 562 | | | | | | | | | | | | |
| 563 | | | | | Normal GOF Test | | | | | | | |
| 564 | | | | | Shapiro Wilk Test Statistic | 0.892 | | | | Shapiro Wilk GOF Test | | |
| 565 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | | Data appear Normal at 5% Significance Level | | |
| 566 | | | | | Lilliefors Test Statistic | 0.15 | | | | Lilliefors GOF Test | | |
| 567 | | | | | 5% Lilliefors Critical Value | 0.256 | | | | Data appear Normal at 5% Significance Level | | |
| 568 | | | | | Data appear Normal at 5% Significance Level | | | | | | | |
| 569 | | | | | | | | | | | | |
| 570 | | | | | Assuming Normal Distribution | | | | | | | |
| 571 | | | | | 95% Normal UCL | | | | | 95% UCLs (Adjusted for Skewness) | | |
| 572 | | | | | 95% Student's-t UCL | 149.2 | | | | 95% Adjusted-CLT UCL (Chen-1995) | | 149.4 |
| 573 | | | | | | | | | | 95% Modified-t UCL (Johnson-1978) | | 149.6 |
| 574 | | | | | | | | | | | | |
| 575 | | | | | Gamma GOF Test | | | | | | | |
| 576 | | | | | A-D Test Statistic | 0.42 | | | | Anderson-Darling Gamma GOF Test | | |
| 577 | | | | | 5% A-D Critical Value | 0.732 | | | | Detected data appear Gamma Distributed at 5% Significance Level | | |
| 578 | | | | | K-S Test Statistic | 0.168 | | | | Kolmogrov-Smirnoff Gamma GOF Test | | |
| 579 | | | | | 5% K-S Critical Value | 0.246 | | | | Detected data appear Gamma Distributed at 5% Significance Level | | |
| 580 | | | | | Detected data appear Gamma Distributed at 5% Significance Level | | | | | | | |
| 581 | | | | | | | | | | | | |
| 582 | | | | | Gamma Statistics | | | | | | | |
| 583 | | | | | k hat (MLE) | 5.806 | | | | k star (bias corrected MLE) | | 4.41 |
| 584 | | | | | Theta hat (MLE) | 20.96 | | | | Theta star (bias corrected MLE) | | 27.59 |
| 585 | | | | | nu hat (MLE) | 139.3 | | | | nu star (bias corrected) | | 105.8 |
| 586 | | | | | MLE Mean (bias corrected) | 121.7 | | | | MLE Sd (bias corrected) | | 57.94 |
| 587 | | | | | | | | | | Approximate Chi Square Value (0.05) | | 83.09 |
| 588 | | | | | Adjusted Level of Significance | 0.029 | | | | Adjusted Chi Square Value | | 80.02 |
| 589 | | | | | | | | | | | | |
| 590 | | | | | Assuming Gamma Distribution | | | | | | | |
| 591 | | | | | 95% Approximate Gamma UCL (use when n>=50)) | 155 | | | | 95% Adjusted Gamma UCL (use when n<50) | | 160.9 |
| 592 | | | | | | | | | | | | |
| 593 | | | | | Lognormal GOF Test | | | | | | | |
| 594 | | | | | Shapiro Wilk Test Statistic | 0.907 | | | | Shapiro Wilk Lognormal GOF Test | | |
| 595 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | | Data appear Lognormal at 5% Significance Level | | |
| 596 | | | | | Lilliefors Test Statistic | 0.159 | | | | Lilliefors Lognormal GOF Test | | |
| 597 | | | | | 5% Lilliefors Critical Value | 0.256 | | | | Data appear Lognormal at 5% Significance Level | | |
| 598 | | | | | Data appear Lognormal at 5% Significance Level | | | | | | | |
| 599 | | | | | | | | | | | | |
| 600 | | | | | Lognormal Statistics | | | | | | | |
| 601 | | | | | Minimum of Logged Data | 4.174 | | | | Mean of logged Data | | 4.713 |
| 602 | | | | | Maximum of Logged Data | 5.339 | | | | SD of logged Data | | 0.442 |
| 603 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 604 | Assuming Lognormal Distribution | | | | | | | | | | | |
| 605 | | | | | 95% H-UCL | 161.7 | | | | 90% Chebyshev (MVUE) UCL | | 169.1 |
| 606 | | | | 95% Chebyshev (MVUE) UCL | | 190.6 | | | | 97.5% Chebyshev (MVUE) UCL | | 220.4 |
| 607 | | | | 99% Chebyshev (MVUE) UCL | | 278.9 | | | | | | |
| 608 | | | | | | | | | | | | |
| 609 | Nonparametric Distribution Free UCL Statistics | | | | | | | | | | | |
| 610 | Data appear to follow a Discernible Distribution at 5% Significance Level | | | | | | | | | | | |
| 611 | | | | | | | | | | | | |
| 612 | Nonparametric Distribution Free UCLs | | | | | | | | | | | |
| 613 | | | | | 95% CLT UCL | 146.9 | | | | 95% Jackknife UCL | | 149.2 |
| 614 | | | | 95% Standard Bootstrap UCL | | 146.2 | | | | 95% Bootstrap-t UCL | | 154.1 |
| 615 | | | | 95% Hall's Bootstrap UCL | | 147.3 | | | | 95% Percentile Bootstrap UCL | | 146.1 |
| 616 | | | | 95% BCA Bootstrap UCL | | 148.9 | | | | | | |
| 617 | | | | 90% Chebyshev(Mean, Sd) UCL | | 167.7 | | | | 95% Chebyshev(Mean, Sd) UCL | | 188.6 |
| 618 | | | | 97.5% Chebyshev(Mean, Sd) UCL | | 217.5 | | | | 99% Chebyshev(Mean, Sd) UCL | | 274.4 |
| 619 | | | | | | | | | | | | |
| 620 | Suggested UCL to Use | | | | | | | | | | | |
| 621 | | | | 95% Student's-t UCL | | 149.2 | | | | | | |
| 622 | | | | | | | | | | | | |
| 623 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 624 | These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) | | | | | | | | | | | |
| 625 | and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. | | | | | | | | | | | |
| 626 | For additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 627 | | | | | | | | | | | | |
| 628 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 629 | PAH, Total | | | | | | | | | | | |
| 630 | | | | | | | | | | | | |
| 631 | | | | | | General Statistics | | | | | | |
| 632 | | | | | Total Number of Observations | 12 | | | | Number of Distinct Observations | | 3 |
| 633 | | | | | | | | | | Number of Missing Observations | | 0 |
| 634 | | | | | Minimum | 0.0078 | | | | Mean | | 0.123 |
| 635 | | | | | Maximum | 0.238 | | | | Median | | 0.123 |
| 636 | | | | | SD | 0.0491 | | | | Std. Error of Mean | | 0.0142 |
| 637 | | | | | Coefficient of Variation | 0.399 | | | | Skewness | | 9.963E-16 |
| 638 | | | | | | | | | | | | |
| 639 | | | | | | Normal GOF Test | | | | | | |
| 640 | | | | | Shapiro Wilk Test Statistic | 0.6 | | | | Shapiro Wilk GOF Test | | |
| 641 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | | Data Not Normal at 5% Significance Level | | |
| 642 | | | | | Lilliefors Test Statistic | 0.417 | | | | Lilliefors GOF Test | | |
| 643 | | | | | 5% Lilliefors Critical Value | 0.256 | | | | Data Not Normal at 5% Significance Level | | |
| 644 | | | | | | Data Not Normal at 5% Significance Level | | | | | | |
| 645 | | | | | | | | | | | | |
| 646 | | | | | | Assuming Normal Distribution | | | | | | |
| 647 | | | | | 95% Normal UCL | | | | | 95% UCLs (Adjusted for Skewness) | | |
| 648 | | | | | 95% Student's-t UCL | 0.149 | | | | 95% Adjusted-CLT UCL (Chen-1995) | | 0.146 |
| 649 | | | | | | | | | | 95% Modified-t UCL (Johnson-1978) | | 0.149 |
| 650 | | | | | | | | | | | | |
| 651 | | | | | | Gamma GOF Test | | | | | | |
| 652 | | | | | A-D Test Statistic | 3.042 | | | | Anderson-Darling Gamma GOF Test | | |
| 653 | | | | | 5% A-D Critical Value | 0.739 | | | | Data Not Gamma Distributed at 5% Significance Level | | |
| 654 | | | | | K-S Test Statistic | 0.493 | | | | Kolmogrov-Smirnoff Gamma GOF Test | | |
| 655 | | | | | 5% K-S Critical Value | 0.247 | | | | Data Not Gamma Distributed at 5% Significance Level | | |
| 656 | | | | | | Data Not Gamma Distributed at 5% Significance Level | | | | | | |
| 657 | | | | | | | | | | | | |
| 658 | | | | | | Gamma Statistics | | | | | | |
| 659 | | | | | k hat (MLE) | 3.017 | | | | k star (bias corrected MLE) | | 2.318 |
| 660 | | | | | Theta hat (MLE) | 0.0408 | | | | Theta star (bias corrected MLE) | | 0.0531 |
| 661 | | | | | nu hat (MLE) | 72.4 | | | | nu star (bias corrected) | | 55.64 |
| 662 | | | | | MLE Mean (bias corrected) | 0.123 | | | | MLE Sd (bias corrected) | | 0.0808 |
| 663 | | | | | | | | | | Approximate Chi Square Value (0.05) | | 39.49 |
| 664 | | | | | Adjusted Level of Significance | 0.029 | | | | Adjusted Chi Square Value | | 37.43 |
| 665 | | | | | | | | | | | | |
| 666 | | | | | | Assuming Gamma Distribution | | | | | | |
| 667 | | | | | 95% Approximate Gamma UCL (use when n>=50)) | 0.173 | | | | 95% Adjusted Gamma UCL (use when n<50) | | 0.183 |
| 668 | | | | | | | | | | | | |
| 669 | | | | | | Lognormal GOF Test | | | | | | |
| 670 | | | | | Shapiro Wilk Test Statistic | 0.456 | | | | Shapiro Wilk Lognormal GOF Test | | |
| 671 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | | Data Not Lognormal at 5% Significance Level | | |
| 672 | | | | | Lilliefors Test Statistic | 0.5 | | | | Lilliefors Lognormal GOF Test | | |
| 673 | | | | | 5% Lilliefors Critical Value | 0.256 | | | | Data Not Lognormal at 5% Significance Level | | |
| 674 | | | | | | Data Not Lognormal at 5% Significance Level | | | | | | |
| 675 | | | | | | | | | | | | |
| 676 | | | | | | Lognormal Statistics | | | | | | |
| 677 | | | | | Minimum of Logged Data | -4.854 | | | | Mean of logged Data | | -2.27 |
| 678 | | | | | Maximum of Logged Data | -1.434 | | | | SD of logged Data | | 0.836 |
| 679 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 680 | Assuming Lognormal Distribution | | | | | | | | | | | |
| 681 | | | | | 95% H-UCL | 0.284 | | | | 90% Chebyshev (MVUE) UCL | | 0.249 |
| 682 | | | | 95% Chebyshev (MVUE) UCL | | 0.298 | | | | 97.5% Chebyshev (MVUE) UCL | | 0.366 |
| 683 | | | | 99% Chebyshev (MVUE) UCL | | 0.499 | | | | | | |
| 684 | | | | | | | | | | | | |
| 685 | Nonparametric Distribution Free UCL Statistics | | | | | | | | | | | |
| 686 | Data do not follow a Discernible Distribution (0.05) | | | | | | | | | | | |
| 687 | | | | | | | | | | | | |
| 688 | Nonparametric Distribution Free UCLs | | | | | | | | | | | |
| 689 | | | | | 95% CLT UCL | 0.146 | | | | 95% Jackknife UCL | | 0.149 |
| 690 | | | | 95% Standard Bootstrap UCL | | N/A | | | | 95% Bootstrap-t UCL | | N/A |
| 691 | | | | 95% Hall's Bootstrap UCL | | N/A | | | | 95% Percentile Bootstrap UCL | | N/A |
| 692 | | | | 95% BCA Bootstrap UCL | | N/A | | | | | | |
| 693 | | | | 90% Chebyshev(Mean, Sd) UCL | | 0.166 | | | | 95% Chebyshev(Mean, Sd) UCL | | 0.185 |
| 694 | | | | 97.5% Chebyshev(Mean, Sd) UCL | | 0.212 | | | | 99% Chebyshev(Mean, Sd) UCL | | 0.264 |
| 695 | | | | | | | | | | | | |
| 696 | Suggested UCL to Use | | | | | | | | | | | |
| 697 | | | | 95% Chebyshev (Mean, Sd) UCL | | 0.185 | | | | | | |
| 698 | | | | | | | | | | | | |
| 699 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 700 | These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) | | | | | | | | | | | |
| 701 | and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. | | | | | | | | | | | |
| 702 | For additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 703 | | | | | | | | | | | | |
| 704 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 705 | PCB, Total | | | | | | | | | | | |
| 706 | | | | | | | | | | | | |
| 707 | | | | | | General Statistics | | | | | | |
| 708 | | | | | Total Number of Observations | 12 | | | | Number of Distinct Observations | | 3 |
| 709 | | | | | | | | | | Number of Missing Observations | | 0 |
| 710 | | | | | Minimum | 0.33 | | | | Mean | | 4.223 |
| 711 | | | | | Maximum | 5 | | | | Median | | 5 |
| 712 | | | | | SD | 1.814 | | | | Std. Error of Mean | | 0.524 |
| 713 | | | | | Coefficient of Variation | 0.429 | | | | Skewness | | -2.055 |
| 714 | | | | | | | | | | | | |
| 715 | | | | | | Normal GOF Test | | | | | | |
| 716 | | | | | Shapiro Wilk Test Statistic | 0.465 | | | | Shapiro Wilk GOF Test | | |
| 717 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | | Data Not Normal at 5% Significance Level | | |
| 718 | | | | | Lilliefors Test Statistic | 0.499 | | | | Lilliefors GOF Test | | |
| 719 | | | | | 5% Lilliefors Critical Value | 0.256 | | | | Data Not Normal at 5% Significance Level | | |
| 720 | | | | | | Data Not Normal at 5% Significance Level | | | | | | |
| 721 | | | | | | | | | | | | |
| 722 | | | | | | Assuming Normal Distribution | | | | | | |
| 723 | | | | | 95% Normal UCL | | | | | 95% UCLs (Adjusted for Skewness) | | |
| 724 | | | | | 95% Student's-t UCL | 5.164 | | | | 95% Adjusted-CLT UCL (Chen-1995) | | 4.753 |
| 725 | | | | | | | | | | 95% Modified-t UCL (Johnson-1978) | | 5.112 |
| 726 | | | | | | | | | | | | |
| 727 | | | | | | Gamma GOF Test | | | | | | |
| 728 | | | | | A-D Test Statistic | 3.522 | | | | Anderson-Darling Gamma GOF Test | | |
| 729 | | | | | 5% A-D Critical Value | 0.742 | | | | Data Not Gamma Distributed at 5% Significance Level | | |
| 730 | | | | | K-S Test Statistic | 0.518 | | | | Kolmogrov-Smirnoff Gamma GOF Test | | |
| 731 | | | | | 5% K-S Critical Value | 0.249 | | | | Data Not Gamma Distributed at 5% Significance Level | | |
| 732 | | | | | | Data Not Gamma Distributed at 5% Significance Level | | | | | | |
| 733 | | | | | | | | | | | | |
| 734 | | | | | | Gamma Statistics | | | | | | |
| 735 | | | | | k hat (MLE) | 1.94 | | | | k star (bias corrected MLE) | | 1.511 |
| 736 | | | | | Theta hat (MLE) | 2.177 | | | | Theta star (bias corrected MLE) | | 2.795 |
| 737 | | | | | nu hat (MLE) | 46.57 | | | | nu star (bias corrected) | | 36.26 |
| 738 | | | | | MLE Mean (bias corrected) | 4.223 | | | | MLE Sd (bias corrected) | | 3.436 |
| 739 | | | | | | | | | | Approximate Chi Square Value (0.05) | | 23.48 |
| 740 | | | | | Adjusted Level of Significance | 0.029 | | | | Adjusted Chi Square Value | | 21.92 |
| 741 | | | | | | | | | | | | |
| 742 | | | | | | Assuming Gamma Distribution | | | | | | |
| 743 | | | | | 95% Approximate Gamma UCL (use when n>=50)) | 6.523 | | | | 95% Adjusted Gamma UCL (use when n<50) | | 6.987 |
| 744 | | | | | | | | | | | | |
| 745 | | | | | | Lognormal GOF Test | | | | | | |
| 746 | | | | | Shapiro Wilk Test Statistic | 0.467 | | | | Shapiro Wilk Lognormal GOF Test | | |
| 747 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | | Data Not Lognormal at 5% Significance Level | | |
| 748 | | | | | Lilliefors Test Statistic | 0.499 | | | | Lilliefors Lognormal GOF Test | | |
| 749 | | | | | 5% Lilliefors Critical Value | 0.256 | | | | Data Not Lognormal at 5% Significance Level | | |
| 750 | | | | | | Data Not Lognormal at 5% Significance Level | | | | | | |
| 751 | | | | | | | | | | | | |
| 752 | | | | | | Lognormal Statistics | | | | | | |
| 753 | | | | | Minimum of Logged Data | -1.109 | | | | Mean of logged Data | | 1.161 |
| 754 | | | | | Maximum of Logged Data | 1.609 | | | | SD of logged Data | | 1.047 |
| 755 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 756 | | | | | Assuming Lognormal Distribution | | | | | | | |
| 757 | | | | | 95% H-UCL | 14.24 | | | | 90% Chebyshev (MVUE) UCL | | 10.23 |
| 758 | | | | 95% Chebyshev (MVUE) UCL | | 12.51 | | | | 97.5% Chebyshev (MVUE) UCL | | 15.68 |
| 759 | | | | 99% Chebyshev (MVUE) UCL | | 21.91 | | | | | | |
| 760 | | | | | | | | | | | | |
| 761 | | | | | Nonparametric Distribution Free UCL Statistics | | | | | | | |
| 762 | | | | | Data do not follow a Discernible Distribution (0.05) | | | | | | | |
| 763 | | | | | | | | | | | | |
| 764 | | | | | Nonparametric Distribution Free UCLs | | | | | | | |
| 765 | | | | | 95% CLT UCL | 5.085 | | | | 95% Jackknife UCL | | 5.164 |
| 766 | | | | 95% Standard Bootstrap UCL | | N/A | | | | 95% Bootstrap-t UCL | | N/A |
| 767 | | | | 95% Hall's Bootstrap UCL | | N/A | | | | 95% Percentile Bootstrap UCL | | N/A |
| 768 | | | | 95% BCA Bootstrap UCL | | N/A | | | | | | |
| 769 | | | | 90% Chebyshev(Mean, Sd) UCL | | 5.794 | | | | 95% Chebyshev(Mean, Sd) UCL | | 6.506 |
| 770 | | | | 97.5% Chebyshev(Mean, Sd) UCL | | 7.493 | | | | 99% Chebyshev(Mean, Sd) UCL | | 9.433 |
| 771 | | | | | | | | | | | | |
| 772 | | | | | Suggested UCL to Use | | | | | | | |
| 773 | | | | 95% Chebyshev (Mean, Sd) UCL | | 6.506 | | | | | | |
| 774 | | | | | | | | | | | | |
| 775 | | | | | Recommended UCL exceeds the maximum observation | | | | | | | |
| 776 | | | | | | | | | | | | |
| 777 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 778 | These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) | | | | | | | | | | | |
| 779 | and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. | | | | | | | | | | | |
| 780 | For additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 781 | | | | | | | | | | | | |
| 782 | Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be | | | | | | | | | | | |
| 783 | reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets. | | | | | | | | | | | |
| 784 | | | | | | | | | | | | |
| 785 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 786 | Uranium | | | | | | | | | | | |
| 787 | | | | | | | | | | | | |
| 788 | | | | | General Statistics | | | | | | | |
| 789 | | | | | Total Number of Observations | 12 | | | Number of Distinct Observations | | | 12 |
| 790 | | | | | | | | | Number of Missing Observations | | | 0 |
| 791 | | | | | Minimum | 12.6 | | | Mean | | | 26.03 |
| 792 | | | | | Maximum | 43.96 | | | Median | | | 24.03 |
| 793 | | | | | SD | 8.931 | | | Std. Error of Mean | | | 2.578 |
| 794 | | | | | Coefficient of Variation | 0.343 | | | Skewness | | | 0.738 |
| 795 | | | | | | | | | | | | |
| 796 | | | | | Normal GOF Test | | | | | | | |
| 797 | | | | | Shapiro Wilk Test Statistic | 0.948 | | | Shapiro Wilk GOF Test | | | |
| 798 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | Data appear Normal at 5% Significance Level | | | |
| 799 | | | | | Lilliefors Test Statistic | 0.144 | | | Lilliefors GOF Test | | | |
| 800 | | | | | 5% Lilliefors Critical Value | 0.256 | | | Data appear Normal at 5% Significance Level | | | |
| 801 | | | | | Data appear Normal at 5% Significance Level | | | | | | | |
| 802 | | | | | | | | | | | | |
| 803 | | | | | Assuming Normal Distribution | | | | | | | |
| 804 | | | | | 95% Normal UCL | | | | 95% UCLs (Adjusted for Skewness) | | | |
| 805 | | | | | 95% Student's-t UCL | 30.66 | | | 95% Adjusted-CLT UCL (Chen-1995) | | | 30.85 |
| 806 | | | | | | | | | 95% Modified-t UCL (Johnson-1978) | | | 30.75 |
| 807 | | | | | | | | | | | | |
| 808 | | | | | Gamma GOF Test | | | | | | | |
| 809 | | | | | A-D Test Statistic | 0.212 | | | Anderson-Darling Gamma GOF Test | | | |
| 810 | | | | | 5% A-D Critical Value | 0.73 | | | Detected data appear Gamma Distributed at 5% Significance Level | | | |
| 811 | | | | | K-S Test Statistic | 0.118 | | | Kolmogrov-Smirnoff Gamma GOF Test | | | |
| 812 | | | | | 5% K-S Critical Value | 0.245 | | | Detected data appear Gamma Distributed at 5% Significance Level | | | |
| 813 | | | | | Detected data appear Gamma Distributed at 5% Significance Level | | | | | | | |
| 814 | | | | | | | | | | | | |
| 815 | | | | | Gamma Statistics | | | | | | | |
| 816 | | | | | k hat (MLE) | 9.548 | | | k star (bias corrected MLE) | | | 7.216 |
| 817 | | | | | Theta hat (MLE) | 2.726 | | | Theta star (bias corrected MLE) | | | 3.607 |
| 818 | | | | | nu hat (MLE) | 229.1 | | | nu star (bias corrected) | | | 173.2 |
| 819 | | | | | MLE Mean (bias corrected) | 26.03 | | | MLE Sd (bias corrected) | | | 9.689 |
| 820 | | | | | | | | | Approximate Chi Square Value (0.05) | | | 143.8 |
| 821 | | | | | Adjusted Level of Significance | 0.029 | | | Adjusted Chi Square Value | | | 139.7 |
| 822 | | | | | | | | | | | | |
| 823 | | | | | Assuming Gamma Distribution | | | | | | | |
| 824 | | | | | 95% Approximate Gamma UCL (use when n>=50)) | 31.36 | | | 95% Adjusted Gamma UCL (use when n<50) | | | 32.27 |
| 825 | | | | | | | | | | | | |
| 826 | | | | | Lognormal GOF Test | | | | | | | |
| 827 | | | | | Shapiro Wilk Test Statistic | 0.978 | | | Shapiro Wilk Lognormal GOF Test | | | |
| 828 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | Data appear Lognormal at 5% Significance Level | | | |
| 829 | | | | | Lilliefors Test Statistic | 0.124 | | | Lilliefors Lognormal GOF Test | | | |
| 830 | | | | | 5% Lilliefors Critical Value | 0.256 | | | Data appear Lognormal at 5% Significance Level | | | |
| 831 | | | | | Data appear Lognormal at 5% Significance Level | | | | | | | |
| 832 | | | | | | | | | | | | |
| 833 | | | | | Lognormal Statistics | | | | | | | |
| 834 | | | | | Minimum of Logged Data | 2.534 | | | Mean of logged Data | | | 3.206 |
| 835 | | | | | Maximum of Logged Data | 3.783 | | | SD of logged Data | | | 0.343 |
| 836 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 837 | | | | | Assuming Lognormal Distribution | | | | | | | |
| 838 | | | | | 95% H-UCL | 32.08 | | | | 90% Chebyshev (MVUE) UCL | | 33.86 |
| 839 | | | | 95% Chebyshev (MVUE) UCL | | 37.41 | | | | 97.5% Chebyshev (MVUE) UCL | | 42.33 |
| 840 | | | | 99% Chebyshev (MVUE) UCL | | 51.99 | | | | | | |
| 841 | | | | | | | | | | | | |
| 842 | | | | | Nonparametric Distribution Free UCL Statistics | | | | | | | |
| 843 | | | | | Data appear to follow a Discernible Distribution at 5% Significance Level | | | | | | | |
| 844 | | | | | | | | | | | | |
| 845 | | | | | Nonparametric Distribution Free UCLs | | | | | | | |
| 846 | | | | | 95% CLT UCL | 30.27 | | | | 95% Jackknife UCL | | 30.66 |
| 847 | | | | 95% Standard Bootstrap UCL | | 30.16 | | | | 95% Bootstrap-t UCL | | 31.46 |
| 848 | | | | 95% Hall's Bootstrap UCL | | 32.29 | | | | 95% Percentile Bootstrap UCL | | 30.05 |
| 849 | | | | 95% BCA Bootstrap UCL | | 30.68 | | | | | | |
| 850 | | | | 90% Chebyshev(Mean, Sd) UCL | | 33.76 | | | | 95% Chebyshev(Mean, Sd) UCL | | 37.26 |
| 851 | | | | 97.5% Chebyshev(Mean, Sd) UCL | | 42.13 | | | | 99% Chebyshev(Mean, Sd) UCL | | 51.68 |
| 852 | | | | | | | | | | | | |
| 853 | | | | | Suggested UCL to Use | | | | | | | |
| 854 | | | | 95% Student's-t UCL | | 30.66 | | | | | | |
| 855 | | | | | | | | | | | | |
| 856 | | | | | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | |
| 857 | | | | | These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) | | | | | | | |
| 858 | | | | | and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. | | | | | | | |
| 859 | | | | | For additional insight the user may want to consult a statistician. | | | | | | | |
| 860 | | | | | | | | | | | | |
| 861 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 862 | Uranium-238 | | | | | | | | | | | |
| 863 | | | | | | | | | | | | |
| 864 | | | | | General Statistics | | | | | | | |
| 865 | | | | | Total Number of Observations | 12 | | | Number of Distinct Observations | | | 3 |
| 866 | | | | | | | | | Number of Missing Observations | | | 0 |
| 867 | | | | | Minimum | 0.86 | | | Mean | | | 3.99 |
| 868 | | | | | Maximum | 7.12 | | | Median | | | 3.99 |
| 869 | | | | | SD | 1.335 | | | Std. Error of Mean | | | 0.385 |
| 870 | | | | | Coefficient of Variation | 0.334 | | | Skewness | | | -1.79E-15 |
| 871 | | | | | | | | | | | | |
| 872 | | | | | Normal GOF Test | | | | | | | |
| 873 | | | | | Shapiro Wilk Test Statistic | 0.6 | | | Shapiro Wilk GOF Test | | | |
| 874 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | Data Not Normal at 5% Significance Level | | | |
| 875 | | | | | Lilliefors Test Statistic | 0.417 | | | Lilliefors GOF Test | | | |
| 876 | | | | | 5% Lilliefors Critical Value | 0.256 | | | Data Not Normal at 5% Significance Level | | | |
| 877 | | | | | Data Not Normal at 5% Significance Level | | | | | | | |
| 878 | | | | | | | | | | | | |
| 879 | | | | | Assuming Normal Distribution | | | | | | | |
| 880 | | | | | 95% Normal UCL | | | | 95% UCLs (Adjusted for Skewness) | | | |
| 881 | | | | | 95% Student's-t UCL | 4.682 | | | 95% Adjusted-CLT UCL (Chen-1995) | | | 4.624 |
| 882 | | | | | | | | | 95% Modified-t UCL (Johnson-1978) | | | 4.682 |
| 883 | | | | | | | | | | | | |
| 884 | | | | | Gamma GOF Test | | | | | | | |
| 885 | | | | | A-D Test Statistic | 2.864 | | | Anderson-Darling Gamma GOF Test | | | |
| 886 | | | | | 5% A-D Critical Value | 0.732 | | | Data Not Gamma Distributed at 5% Significance Level | | | |
| 887 | | | | | K-S Test Statistic | 0.469 | | | Kolmogrov-Smirnoff Gamma GOF Test | | | |
| 888 | | | | | 5% K-S Critical Value | 0.246 | | | Data Not Gamma Distributed at 5% Significance Level | | | |
| 889 | | | | | Data Not Gamma Distributed at 5% Significance Level | | | | | | | |
| 890 | | | | | | | | | | | | |
| 891 | | | | | Gamma Statistics | | | | | | | |
| 892 | | | | | k hat (MLE) | 6.442 | | | k star (bias corrected MLE) | | | 4.887 |
| 893 | | | | | Theta hat (MLE) | 0.619 | | | Theta star (bias corrected MLE) | | | 0.817 |
| 894 | | | | | nu hat (MLE) | 154.6 | | | nu star (bias corrected) | | | 117.3 |
| 895 | | | | | MLE Mean (bias corrected) | 3.99 | | | MLE Sd (bias corrected) | | | 1.805 |
| 896 | | | | | | | | | Approximate Chi Square Value (0.05) | | | 93.28 |
| 897 | | | | | Adjusted Level of Significance | 0.029 | | | Adjusted Chi Square Value | | | 90.01 |
| 898 | | | | | | | | | | | | |
| 899 | | | | | Assuming Gamma Distribution | | | | | | | |
| 900 | | | | | 95% Approximate Gamma UCL (use when n>=50)) | 5.017 | | | 95% Adjusted Gamma UCL (use when n<50) | | | 5.199 |
| 901 | | | | | | | | | | | | |
| 902 | | | | | Lognormal GOF Test | | | | | | | |
| 903 | | | | | Shapiro Wilk Test Statistic | 0.512 | | | Shapiro Wilk Lognormal GOF Test | | | |
| 904 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | Data Not Lognormal at 5% Significance Level | | | |
| 905 | | | | | Lilliefors Test Statistic | 0.482 | | | Lilliefors Lognormal GOF Test | | | |
| 906 | | | | | 5% Lilliefors Critical Value | 0.256 | | | Data Not Lognormal at 5% Significance Level | | | |
| 907 | | | | | Data Not Lognormal at 5% Significance Level | | | | | | | |
| 908 | | | | | | | | | | | | |
| 909 | | | | | Lognormal Statistics | | | | | | | |
| 910 | | | | | Minimum of Logged Data | -0.151 | | | Mean of logged Data | | | 1.304 |
| 911 | | | | | Maximum of Logged Data | 1.963 | | | SD of logged Data | | | 0.488 |
| 912 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 913 | | | | | Assuming Lognormal Distribution | | | | | | | |
| 914 | | | | | 95% H-UCL | 5.672 | | | | 90% Chebyshev (MVUE) UCL | | 5.877 |
| 915 | | | | 95% Chebyshev (MVUE) UCL | | 6.68 | | | | 97.5% Chebyshev (MVUE) UCL | | 7.794 |
| 916 | | | | 99% Chebyshev (MVUE) UCL | | 9.983 | | | | | | |
| 917 | | | | | | | | | | | | |
| 918 | | | | | Nonparametric Distribution Free UCL Statistics | | | | | | | |
| 919 | | | | | Data do not follow a Discernible Distribution (0.05) | | | | | | | |
| 920 | | | | | | | | | | | | |
| 921 | | | | | Nonparametric Distribution Free UCLs | | | | | | | |
| 922 | | | | | 95% CLT UCL | 4.624 | | | | 95% Jackknife UCL | | 4.682 |
| 923 | | | | 95% Standard Bootstrap UCL | | N/A | | | | 95% Bootstrap-t UCL | | N/A |
| 924 | | | | 95% Hall's Bootstrap UCL | | N/A | | | | 95% Percentile Bootstrap UCL | | N/A |
| 925 | | | | 95% BCA Bootstrap UCL | | N/A | | | | | | |
| 926 | | | | 90% Chebyshev(Mean, Sd) UCL | | 5.146 | | | | 95% Chebyshev(Mean, Sd) UCL | | 5.669 |
| 927 | | | | 97.5% Chebyshev(Mean, Sd) UCL | | 6.396 | | | | 99% Chebyshev(Mean, Sd) UCL | | 7.823 |
| 928 | | | | | | | | | | | | |
| 929 | | | | | Suggested UCL to Use | | | | | | | |
| 930 | | | | | 95% Student's-t UCL | 4.682 | | | | or 95% Modified-t UCL | | 4.682 |
| 931 | | | | | | | | | | | | |
| 932 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 933 | These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) | | | | | | | | | | | |
| 934 | and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. | | | | | | | | | | | |
| 935 | For additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 936 | | | | | | | | | | | | |
| 937 | Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be | | | | | | | | | | | |
| 938 | reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets. | | | | | | | | | | | |
| 939 | | | | | | | | | | | | |
| 940 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 941 | Vanadium | | | | | | | | | | | |
| 942 | | | | | | | | | | | | |
| 943 | | | | | | General Statistics | | | | | | |
| 944 | | | | | Total Number of Observations | 12 | | | | Number of Distinct Observations | | 4 |
| 945 | | | | | | | | | | Number of Missing Observations | | 0 |
| 946 | | | | | Minimum | 31.9 | | | | Mean | | 67.37 |
| 947 | | | | | Maximum | 77.92 | | | | Median | | 70 |
| 948 | | | | | SD | 11.41 | | | | Std. Error of Mean | | 3.295 |
| 949 | | | | | Coefficient of Variation | 0.169 | | | | Skewness | | -3.175 |
| 950 | | | | | | | | | | | | |
| 951 | | | | | | Normal GOF Test | | | | | | |
| 952 | | | | | Shapiro Wilk Test Statistic | 0.459 | | | | Shapiro Wilk GOF Test | | |
| 953 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | | Data Not Normal at 5% Significance Level | | |
| 954 | | | | | Lilliefors Test Statistic | 0.46 | | | | Lilliefors GOF Test | | |
| 955 | | | | | 5% Lilliefors Critical Value | 0.256 | | | | Data Not Normal at 5% Significance Level | | |
| 956 | | | | | | Data Not Normal at 5% Significance Level | | | | | | |
| 957 | | | | | | | | | | | | |
| 958 | | | | | | Assuming Normal Distribution | | | | | | |
| 959 | | | | | 95% Normal UCL | | | | | 95% UCLs (Adjusted for Skewness) | | |
| 960 | | | | | 95% Student's-t UCL | 73.29 | | | | 95% Adjusted-CLT UCL (Chen-1995) | | 69.56 |
| 961 | | | | | | | | | | 95% Modified-t UCL (Johnson-1978) | | 72.78 |
| 962 | | | | | | | | | | | | |
| 963 | | | | | | Gamma GOF Test | | | | | | |
| 964 | | | | | A-D Test Statistic | 3.35 | | | | Anderson-Darling Gamma GOF Test | | |
| 965 | | | | | 5% A-D Critical Value | 0.731 | | | | Data Not Gamma Distributed at 5% Significance Level | | |
| 966 | | | | | K-S Test Statistic | 0.48 | | | | Kolmogrov-Smirnoff Gamma GOF Test | | |
| 967 | | | | | 5% K-S Critical Value | 0.245 | | | | Data Not Gamma Distributed at 5% Significance Level | | |
| 968 | | | | | | Data Not Gamma Distributed at 5% Significance Level | | | | | | |
| 969 | | | | | | | | | | | | |
| 970 | | | | | | Gamma Statistics | | | | | | |
| 971 | | | | | k hat (MLE) | 25.26 | | | | k star (bias corrected MLE) | | 19 |
| 972 | | | | | Theta hat (MLE) | 2.667 | | | | Theta star (bias corrected MLE) | | 3.545 |
| 973 | | | | | nu hat (MLE) | 606.3 | | | | nu star (bias corrected) | | 456.1 |
| 974 | | | | | MLE Mean (bias corrected) | 67.37 | | | | MLE Sd (bias corrected) | | 15.45 |
| 975 | | | | | | | | | | Approximate Chi Square Value (0.05) | | 407.6 |
| 976 | | | | | Adjusted Level of Significance | 0.029 | | | | Adjusted Chi Square Value | | 400.6 |
| 977 | | | | | | | | | | | | |
| 978 | | | | | | Assuming Gamma Distribution | | | | | | |
| 979 | | | | | 95% Approximate Gamma UCL (use when n>=50)) | 75.39 | | | | 95% Adjusted Gamma UCL (use when n<50) | | 76.71 |
| 980 | | | | | | | | | | | | |
| 981 | | | | | | Lognormal GOF Test | | | | | | |
| 982 | | | | | Shapiro Wilk Test Statistic | 0.417 | | | | Shapiro Wilk Lognormal GOF Test | | |
| 983 | | | | | 5% Shapiro Wilk Critical Value | 0.859 | | | | Data Not Lognormal at 5% Significance Level | | |
| 984 | | | | | Lilliefors Test Statistic | 0.482 | | | | Lilliefors Lognormal GOF Test | | |
| 985 | | | | | 5% Lilliefors Critical Value | 0.256 | | | | Data Not Lognormal at 5% Significance Level | | |
| 986 | | | | | | Data Not Lognormal at 5% Significance Level | | | | | | |
| 987 | | | | | | | | | | | | |
| 988 | | | | | | Lognormal Statistics | | | | | | |
| 989 | | | | | Minimum of Logged Data | 3.463 | | | | Mean of logged Data | | 4.19 |
| 990 | | | | | Maximum of Logged Data | 4.356 | | | | SD of logged Data | | 0.231 |
| 991 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 992 | | | | | Assuming Lognormal Distribution | | | | | | | |
| 993 | | | | | 95% H-UCL | 77.27 | | | | 90% Chebyshev (MVUE) UCL | | 81.31 |
| 994 | | | | 95% Chebyshev (MVUE) UCL | | 87.49 | | | | 97.5% Chebyshev (MVUE) UCL | | 96.06 |
| 995 | | | | 99% Chebyshev (MVUE) UCL | | 112.9 | | | | | | |
| 996 | | | | | | | | | | | | |
| 997 | | | | | Nonparametric Distribution Free UCL Statistics | | | | | | | |
| 998 | | | | | Data do not follow a Discernible Distribution (0.05) | | | | | | | |
| 999 | | | | | | | | | | | | |
| 1000 | | | | | Nonparametric Distribution Free UCLs | | | | | | | |
| 1001 | | | | | 95% CLT UCL | 72.79 | | | | 95% Jackknife UCL | | 73.29 |
| 1002 | | | | 95% Standard Bootstrap UCL | | N/A | | | | 95% Bootstrap-t UCL | | N/A |
| 1003 | | | | 95% Hall's Bootstrap UCL | | N/A | | | | 95% Percentile Bootstrap UCL | | N/A |
| 1004 | | | | 95% BCA Bootstrap UCL | | N/A | | | | | | |
| 1005 | | | | 90% Chebyshev(Mean, Sd) UCL | | 77.26 | | | | 95% Chebyshev(Mean, Sd) UCL | | 81.73 |
| 1006 | | | | 97.5% Chebyshev(Mean, Sd) UCL | | 87.95 | | | | 99% Chebyshev(Mean, Sd) UCL | | 100.2 |
| 1007 | | | | | | | | | | | | |
| 1008 | | | | | Suggested UCL to Use | | | | | | | |
| 1009 | | | | | 95% Student's-t UCL | 73.29 | | | | or 95% Modified-t UCL | | 72.78 |
| 1010 | | | | | | | | | | | | |
| 1011 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 1012 | These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) | | | | | | | | | | | |
| 1013 | and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. | | | | | | | | | | | |
| 1014 | For additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 1015 | | | | | | | | | | | | |
| 1016 | Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be | | | | | | | | | | | |
| 1017 | reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets. | | | | | | | | | | | |
| 1018 | | | | | | | | | | | | |