## General Statistics

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Total Number of Observations</td>
<td>46</td>
<td>Number of Distinct Observations</td>
</tr>
<tr>
<td>Number of Detects</td>
<td>44</td>
<td>Number of Non-Detects</td>
</tr>
<tr>
<td>Number of Distinct Detects</td>
<td>44</td>
<td>Number of Distinct Non-Detects</td>
</tr>
<tr>
<td>Minimum Detect</td>
<td>0.461</td>
<td>Minimum Non-Detect</td>
</tr>
<tr>
<td>Maximum Detect</td>
<td>6.695</td>
<td>Maximum Non-Detect</td>
</tr>
<tr>
<td>Variance Detected</td>
<td>1.23</td>
<td>Percent Non-Detects</td>
</tr>
<tr>
<td>Mean Detected</td>
<td>2.141</td>
<td>SD Detected</td>
</tr>
<tr>
<td>Mean of Detected Logged Data</td>
<td>0.639</td>
<td>SD of Detected Logged Data</td>
</tr>
</tbody>
</table>

## Critical Values for Background Threshold Values (BTVs)

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<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Tolerance Factor K (For UTL)</td>
<td>2.079</td>
<td>d2max (for USL)</td>
</tr>
</tbody>
</table>

## Gamma GOF Tests on Detected Observations Only

- A-D Test Statistic: 0.585
- K-S Test Statistic: 0.109
- 5% A-D Critical Value: 0.753
- 5% K-S Critical Value: 0.134
- Detected data appear Gamma Distributed at 5% Significance Level

### Kaplan Meier (KM) Background Statistics Assuming Normal Distribution

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<table>
<thead>
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<tbody>
<tr>
<td>Mean</td>
<td>2.08</td>
<td>SD</td>
</tr>
<tr>
<td>95% UTL</td>
<td>4.392</td>
<td>95% KM UPL (t)</td>
</tr>
<tr>
<td>95% KM Chebyshev UPL</td>
<td>6.98</td>
<td>90% KM Percentile (2)</td>
</tr>
<tr>
<td>95% KM Percentile (2)</td>
<td>3.909</td>
<td>99% KM Percentile (2)</td>
</tr>
<tr>
<td>95% KM USL</td>
<td>5.332</td>
<td></td>
</tr>
</tbody>
</table>

## Gamma Statistics on Detected Data Only

- $\nu^\text{hat}$ (MLE): 372.7
- $\nu^\text{star}$ (bias corrected): 348.6
- $\kappa^\text{hat}$ (MLE): 4.235
- $\kappa^\text{star}$ (bias corrected MLE): 3.562
- $\theta^\text{hat}$ (MLE): 0.506
- $\theta^\text{star}$ (bias corrected MLE): 0.54

## Gamma ROS Statistics using Imputed Non-Detects

- GROS may not be used when dataset has > 50% NDs with many tied observations at multiple DLs
- GROS may not be used when $k^\text{star}$ of detected data is small such as < 0.1
- For such situations, GROS method tends to yield inflated values of UCLs and BTVs
- For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

### General Statistics

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<table>
<thead>
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</thead>
<tbody>
<tr>
<td>Minimum</td>
<td>0.461</td>
<td>Mean</td>
</tr>
<tr>
<td>Maximum</td>
<td>6.695</td>
<td>Median</td>
</tr>
<tr>
<td>SD</td>
<td>1.127</td>
<td>CV</td>
</tr>
<tr>
<td>$\kappa^\text{hat}$ (MLE): 3.795</td>
<td>$\kappa^\text{star}$ (bias corrected MLE): 3.562</td>
<td></td>
</tr>
<tr>
<td>$\theta^\text{hat}$ (MLE): 0.547</td>
<td>$\theta^\text{star}$ (bias corrected MLE): 0.583</td>
<td></td>
</tr>
<tr>
<td>$\nu^\text{hat}$ (MLE): 349.2</td>
<td>$\nu^\text{star}$ (bias corrected): 327.7</td>
<td></td>
</tr>
<tr>
<td>MLE Mean (bias corrected): 2.077</td>
<td>MLE SD (bias corrected): 1.101</td>
<td></td>
</tr>
<tr>
<td>95% Percentile (Chisquare (2k)): 14.25</td>
<td>90% Percentile: 3.553</td>
<td></td>
</tr>
<tr>
<td>95% Percentile: 4.154</td>
<td>99% Percentile: 5.446</td>
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</tbody>
</table>

### The following statistics are computed using Gamma ROS Statistics on Imputed Data

#### Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods

<table>
<thead>
<tr>
<th></th>
<th>WH</th>
<th>HW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approx. Gamma UTL with 95% Coverage</td>
<td>4.881</td>
<td>4.19</td>
</tr>
<tr>
<td>95% Approx. Gamma UPL</td>
<td>5.016</td>
<td>4.28</td>
</tr>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>---</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>63</td>
<td>95% Gamma USL</td>
<td>6.67</td>
</tr>
<tr>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>The following statistics are computed using gamma distribution and KM estimates</td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods</td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>k hat (KM)</td>
<td>3.496</td>
</tr>
<tr>
<td>69</td>
<td>WH</td>
<td>HW</td>
</tr>
<tr>
<td>70</td>
<td>Approx. Gamma UTL with 95% Coverage</td>
<td>4.831</td>
</tr>
<tr>
<td>71</td>
<td>95% Gamma USL</td>
<td>6.58</td>
</tr>
</tbody>
</table>

Note: The use of USL to estimate a BTV is recommended only when the data set represents a background data set free of outliers and consists of observations collected from clean unimpacted locations. The use of USL tends to provide a balance between false positives and false negatives provided the data represents a background data set and when many onsite observations need to be compared with the BTV.