ASQ CRE Prep course

Lesson II. B. 2. b.

Statistical Interval Estimates

About MTBF Estimates

Time to failure data

MTBF CONFIDENCE INTERVALS

With Type I Censoring

- **Test run for 250 hours**
- **4 failures occurred (with replacements)**
- **What is lower CI and 2-side CI**
- **Use 90% confidence**

$$\frac{2T}{\chi^2_{\alpha,\,2r+2}} \le \theta$$

$$\frac{2T}{\chi^2_{\frac{\alpha}{2},\,2r+2}} \le \theta \le \frac{2T}{\chi^2_{1-\frac{\alpha}{2},\,2r}}$$

With Type II Censoring

- **4 units tested end with first failure**
- **1 failure occurred at 250 hours**
- **What is lower CI and 2-side CI**
- **Use 90% confidence**

$$\frac{2T}{\chi^2_{\alpha,\,2r}} \le \theta$$

$$\frac{2T}{\chi^2_{\frac{\alpha}{2},\,2r}} \le \theta \le \frac{2T}{\chi^2_{1-\frac{\alpha}{2},\,2r}}$$

Thus we generally want more samples

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Lesson II. B. 3. a.

Hypothesis Testing

The Process