ASQ CRE Prep course

Lesson II. B. 1.

Point Estimates of Parameters

The basic estimate of a parameter from a statistic

POINT ESTIMATES

Basic Statistics

- **Mean**

$$\bar{X} = \frac{\sum x_i}{n}$$

- **L10**
- **Median**
- **Scale**
- **Standard Deviation**

$$s = \sqrt{\frac{\sum \left(x_i - \bar{X}\right)^2}{n-1}}$$

- **Variance**
- **Range**
- **Shape**

MTBF or MTTF Estimate

- **Good as new?**
- **Good as old?**
- **Only repaired part is good as new?**

Censoring Data

- **Non censored**
- **Censored data**
  - **Type I – time**
  - **Type II - # failures**

MTBF Estimate No Censored Data

$$\hat{\theta} = \frac{nT}{r}$$

θ = MTBF or MTTF
n = number of units
T = time each unit operated
R = number of failures across all units, n, and time, T

MTBF Estimate Type I Censoring

- 8 motors place on test
- Test is run 1,000 hours and stopped
- Failed motors are replace with new units
- 3 motors failed during testing

MTBF Estimate Type II Censoring

- 8 motors place on test
- Test is run till second failure and stopped
- Failed motors are not replace
- Motors failed at 256 and 879 hours

What information is missing here?

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Lesson II. B. 2. a.

Statistical Interval Estimates

About Point Estimates