Standard Statistical Techniques

Computer System Performance Measurement

Industry Practice: ***Gross*** Misuse

- **Graphs**
- **Sample size**
- **Average**
- **Standard deviation**
- **Typical**
- **Unusual**
- **Outlier**
- **Skew**
- **Normal**
- **Median**

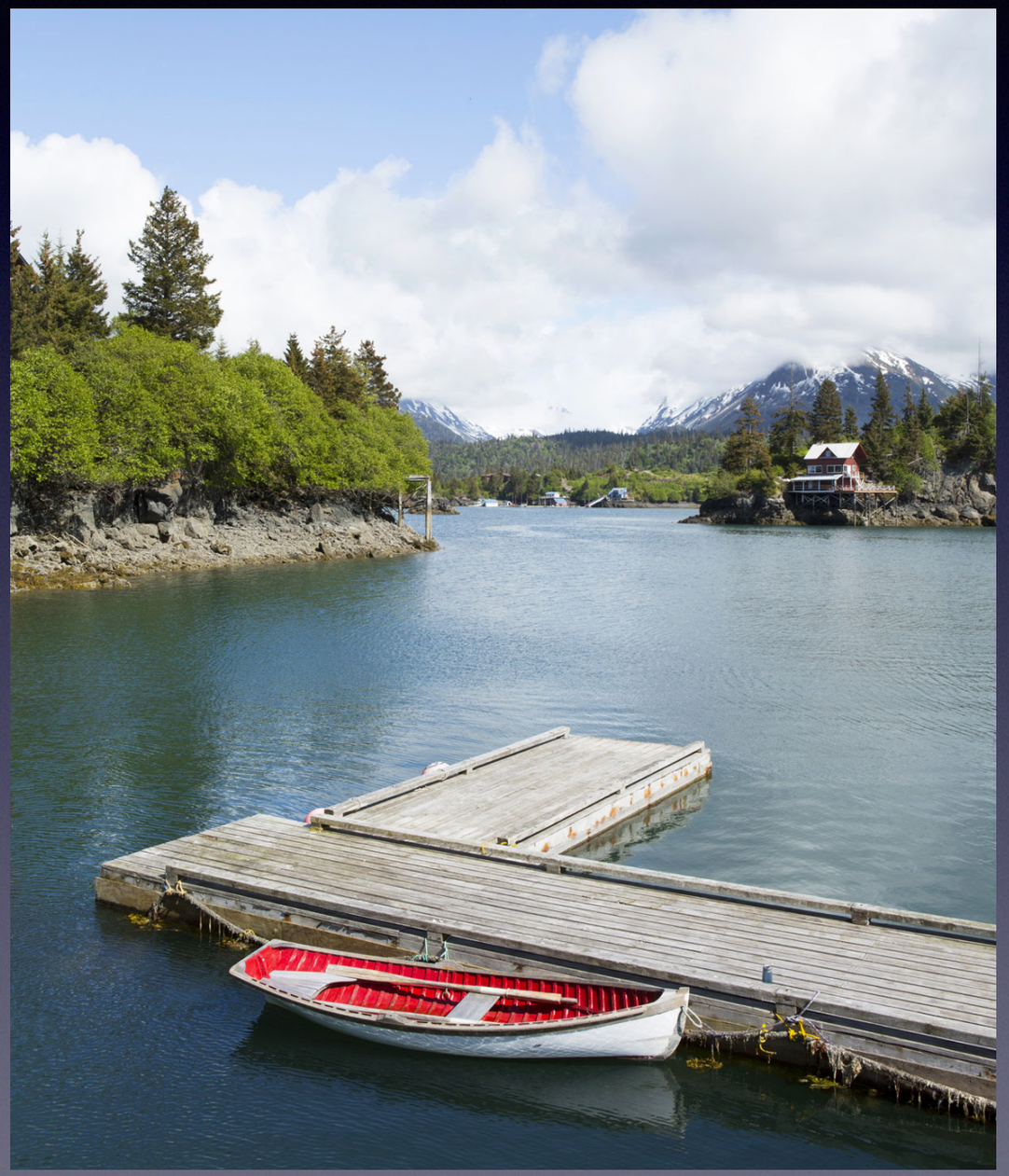
Statistics Have…

- Definition
- Meaning
- Formula
- Use

Sample Size

Stop at 30

Maybe 32…



Law of Large Numbers

- Improve Precision
- Diminishing returns +30

First Stop:
Evaluate Data with a Dot Plot

Next: Histogram

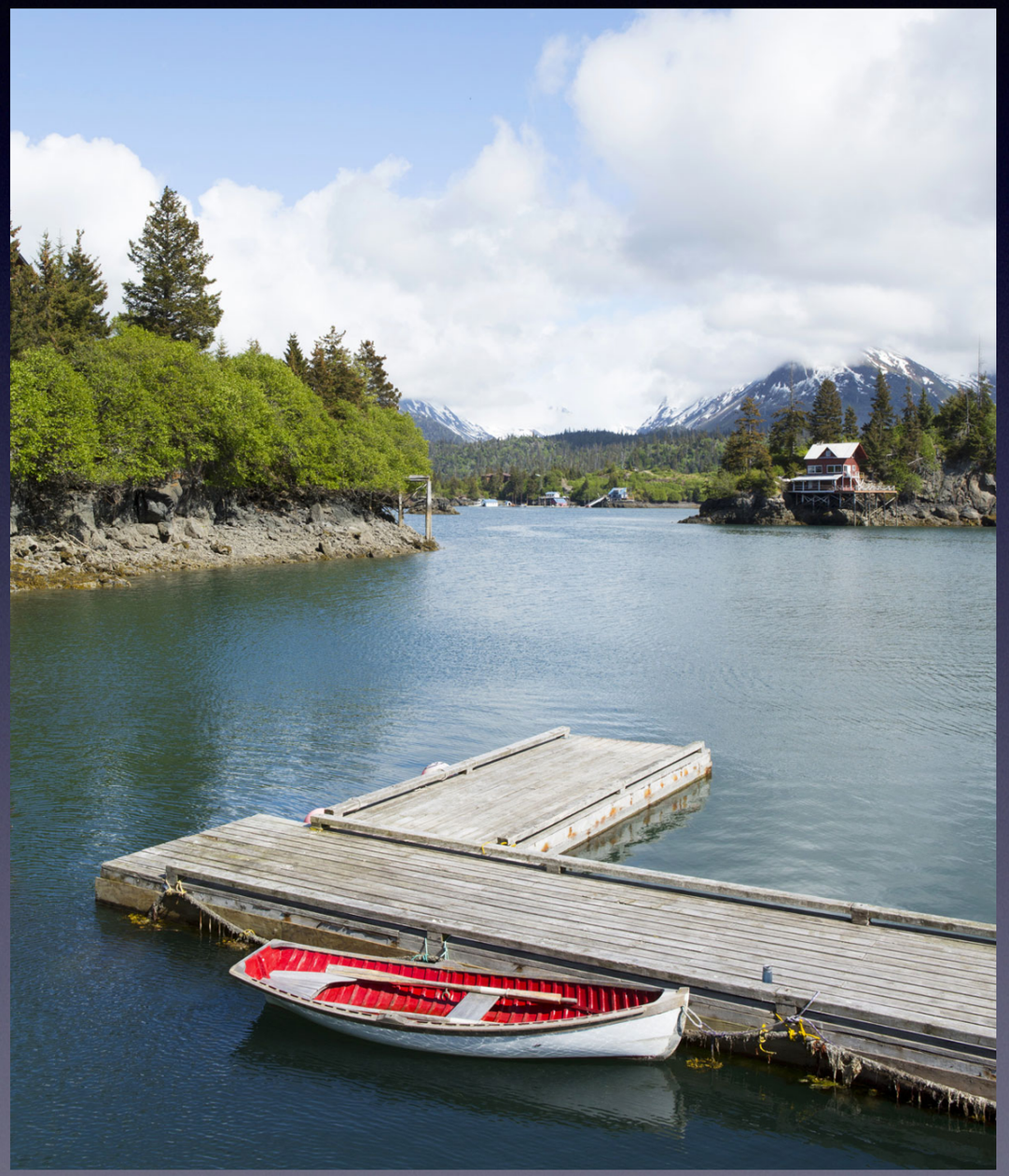
Is it **Normal**?

- Yes:

  Performance analysis

- No:

  Failure analysis

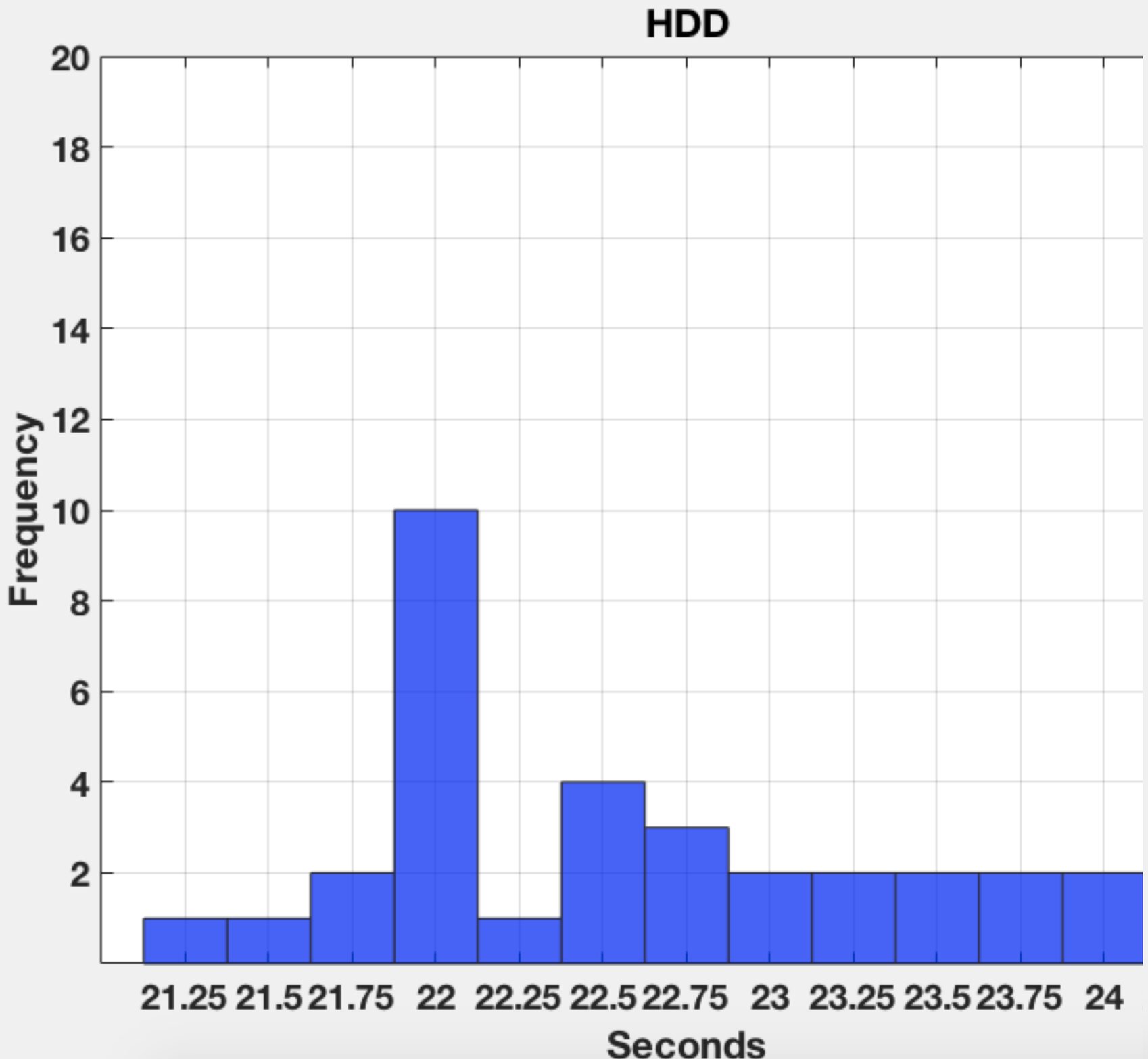


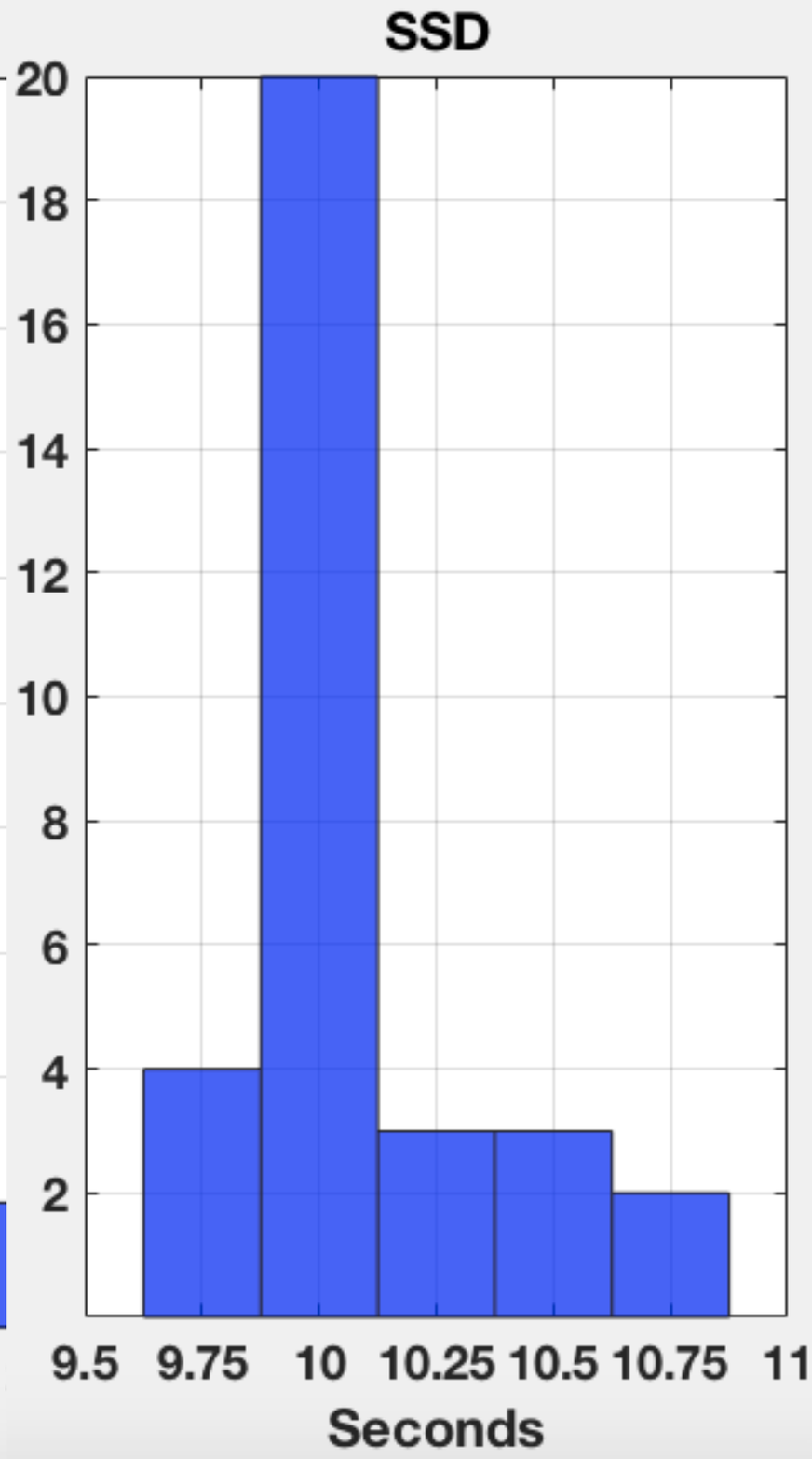
Case Study

Computer Boot Time

SSD vs HDD

Boot Time Histogram
Hard Drive vs Solid State





Failure Analysis

- Median
- Skew
- Quartiles
- Outliers
- Dot plot, histogram, box plot
- Product?
- Process?
- Test Engineer?

Performance Analysis

- Dot plot
- Histogram
- Test for normality
- Margin of error
- Mean
- Standard deviation

Standard Deviation

- Has definition, formula, use
- “Average distance from Average”
- Describes spread
- Normal ***only***
- +/- 2S = “Typical”

Outlier

- Definition and formula

  Q3 + 1.5 * IQR

  Q1 - 1.5 * IQR

- Skewed ***only***

Statistics Tells Us

- What we have
- Sample size
- Spread
- Good test?
- Product working?

Statistics will NOT tell us

- Deviation good or bad?
- Performance good or bad?

Key Tools

- **Statistics Text Book**
- **Sample size 30**
- **Dot Plot**
- **Test for Normality**
- **Margin of Error**
- **Mean, Std Dev, Typical**
- **Median, Outlier, Quartiles**
- **TI-84**