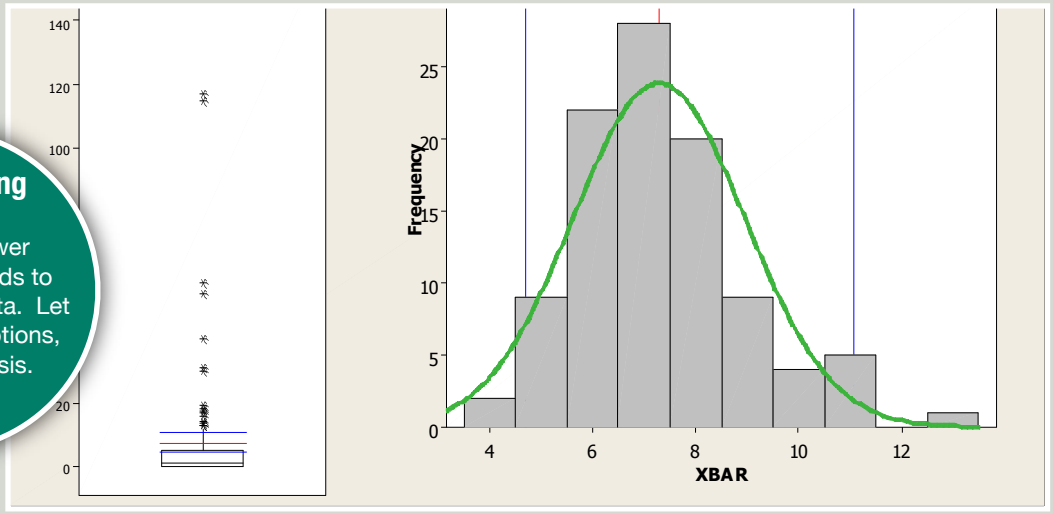
= Practical Stats

www.practicalstats.com



Bootstrapping

One of the newer statistical methods to analyze messy data. Let data, not assumptions, drive the analysis.

Applied Environmental Statistics

Statistics, down to earth

This 4.5 day course develops hands-on expertise for all environmental scientists who interpret data and present their findings to others. A complete understanding of how statistical methods work unfolds through applications to field-oriented problems in water quality, air quality, and bio contaminants. Statistical methods are explained in the light of data with nondetects, outliers, and skewed distributions. Methods for estimation and prediction are illustrated along with their common pitfalls. Emphases include nonparametric methods, including permutation tests and bootstrapping.

Course Content:

- Trend analysis -- is it getting better or worse?
- Confidence, prediction, tolerance & equivalence intervals.
- How hypothesis tests work.
- Parametric, nonparametric and permutation tests. When to use which.
- How to build a good regression equation.
- Dealing with outliers.
- When are transformations OK?
- How many samples do I need?
- and more.

Interactive and relevant

Student exercises follow each lecture to ensure that when you return to the office, so does your new knowledge

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Applied Environmental Statistics

Course Outline

DAY 1

Describing Data in a Group
- Estimation
- Good graphs
- Dealing with outliers
- When to transform

How Hypothesis Tests Work
- Their common denominators
- Their jargon explained
- 1-sided and 2-sided tests

Statistical intervals
- Coping with uncertainty
- Coping with skewed data
- Confidence, prediction, tolerance intervals
- Bootstrapping

Contingency Tables
- Does the frequency change between groups?
- Use with censored data

DAY 2

Comparing Two Groups of Data
- Are means, medians different?
- Parametric and nonparametric tests
- Paired data
- The quantile test

How many observations do I need?
- Weaknesses of standard formulae
- Interactions between variation, power, and dollars
- Software available

Comparing Three or More Groups
- one- and two-factor ANOVA
- non-parametric alternatives
- multiple comparison tests: who's different?

Testing differences in Variability/Precision
- Characterizing differences in variability
- Levene's & Squared Ranks tests

Correlation
- Linear and monotonic correlation
- r, rho and tau
- Kendall's linear model

DAY 3

Linear Regression
- How to build a good regression model
- Measures of quality better than r-squared
- Hypothesis tests, confidence and prediction intervals
- Load estimation

Multiple Regression
- Dealing with multi-collinearity
- How to do better than stepwise selection
- Residual and probability plots

Which test to use?
Get the answer from the guide on our website.