

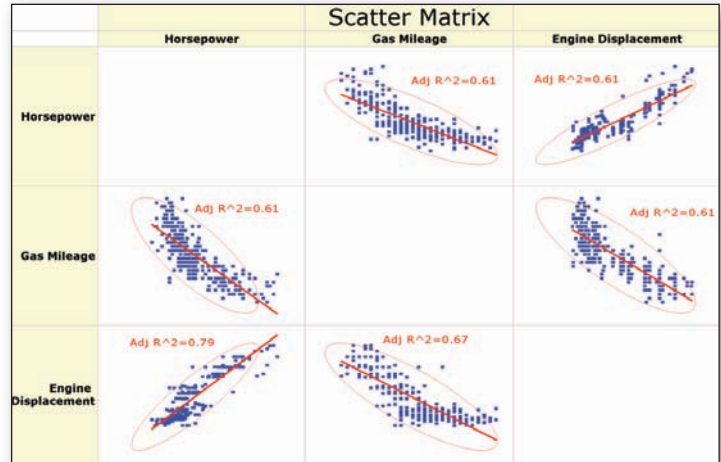
Statistics

Origin provides tools for descriptive statistics, 1D and 2D frequency counting, parametric tests, and one-way and two-way ANOVA. The features presented below are more advanced tools available only in OriginPro.

Correlation Coefficient **PRO**

Obtain a correlation coefficient, scatter plot and confidence ellipse using the following methods:

- Pearson R
- SpearmanR
- KendallT au-b



Scatter matrix plot with confidence ellipse for correlation analysis

Discrete Frequency **PRO**

Count categorical data values in a sample and report the relative and cumulative frequencies.

Parametric Hypothesis Tests **PRO**

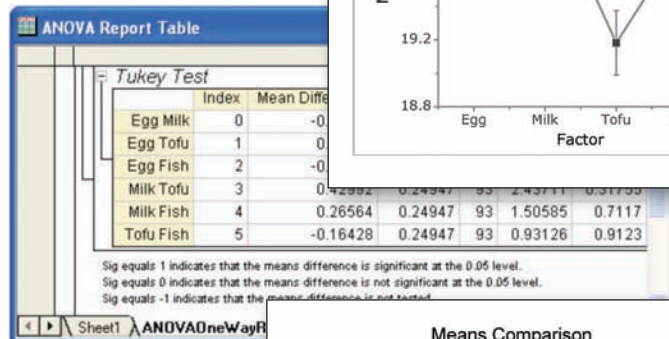
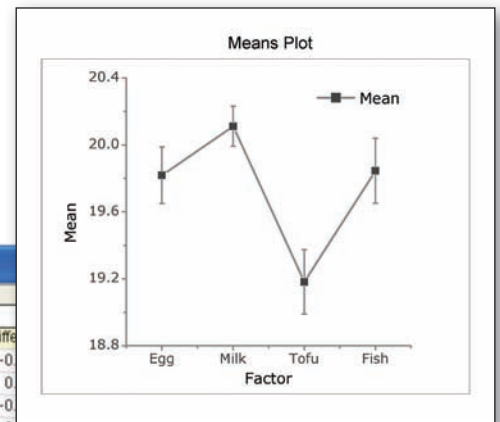
Two additional parametric tests are available:

- One-sample Chi-square test for variance
- Two-sample F-test for variance

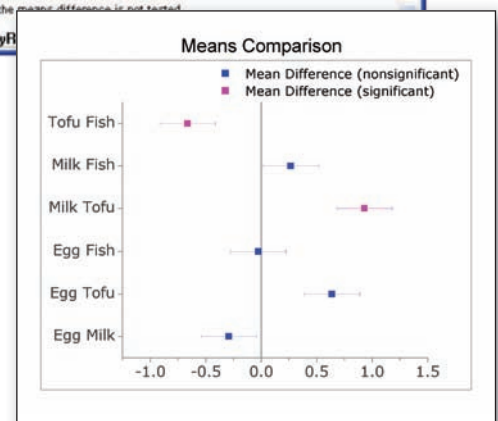
Repeated Measures ANOVA **PRO**

Eight powerful means-comparison tests, both one-way and two-way:

- Tukey
- Bonferroni
- Dunn-Sidak
- FisherLS D
- Scheffé
- Dunnett
- Holm-Bonferroni
- Holm-Sidak



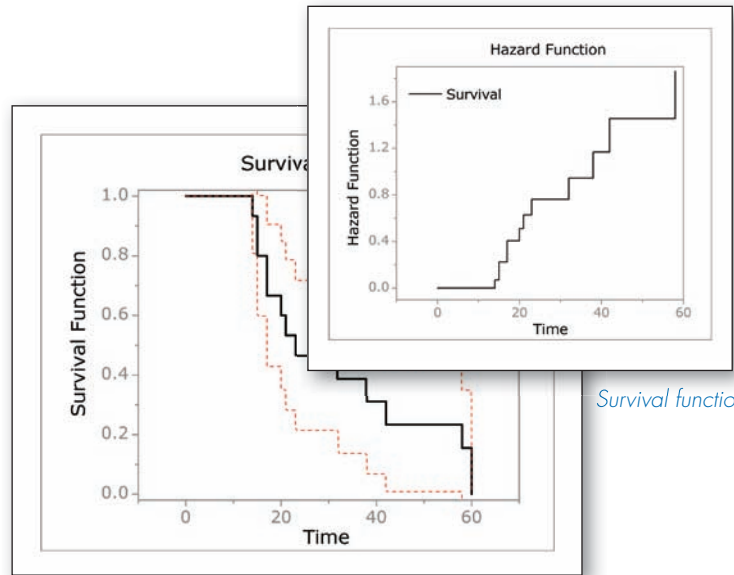
Means-comparison table, means plot, and mean-comparison plot in an ANOVA report



Nonparametric Tests PRO

Several nonparametric tests are available, including:

- One-Sample Wilcoxon Signed Rank
- Paired-Sample Sign
- Paired-Sample Wilcoxon Signed Rank
- Two-Sample Kolmogorov-Smirnov
- Mann-Whitney
- Kruskal-Wallis ANOVA
- Mood's Median
- Friedman ANOVA

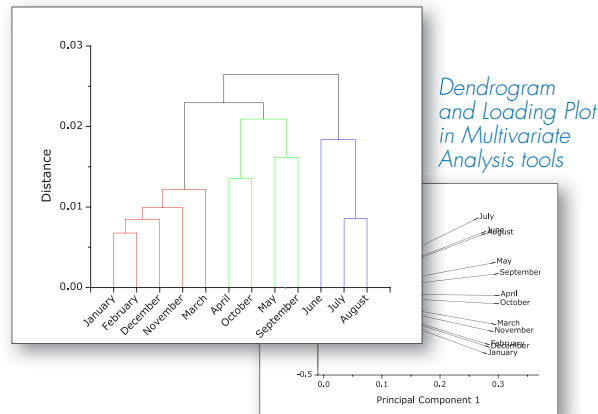


Survival function plots

Multivariate Analysis PRO

Four commonly used multivariate tools are available:

- Principal Component Analysis
- K-Means Cluster
- Hierarchical Cluster
- Discriminant Analysis



Dendrogram and Loading Plot in Multivariate Analysis tools

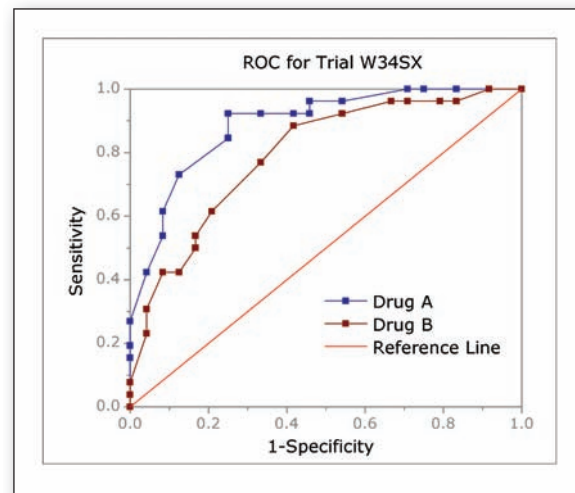
Survival Analysis PRO

Choose from three widely used survival analysis functions:

- Kaplan-Meier product-limit estimator, with three equality test methods
 - Log-rank
 - Breslow
 - Tarone-Ware
- Cox Proportional Hazards Model
- Weibull Fit Model

ROC Curves PRO

Create Receiver Operating Characteristic (ROC) curves, summarizing the trade-off between false-negative and false-positive rates for all possible cutoff values.



ROC curve comparing two samples