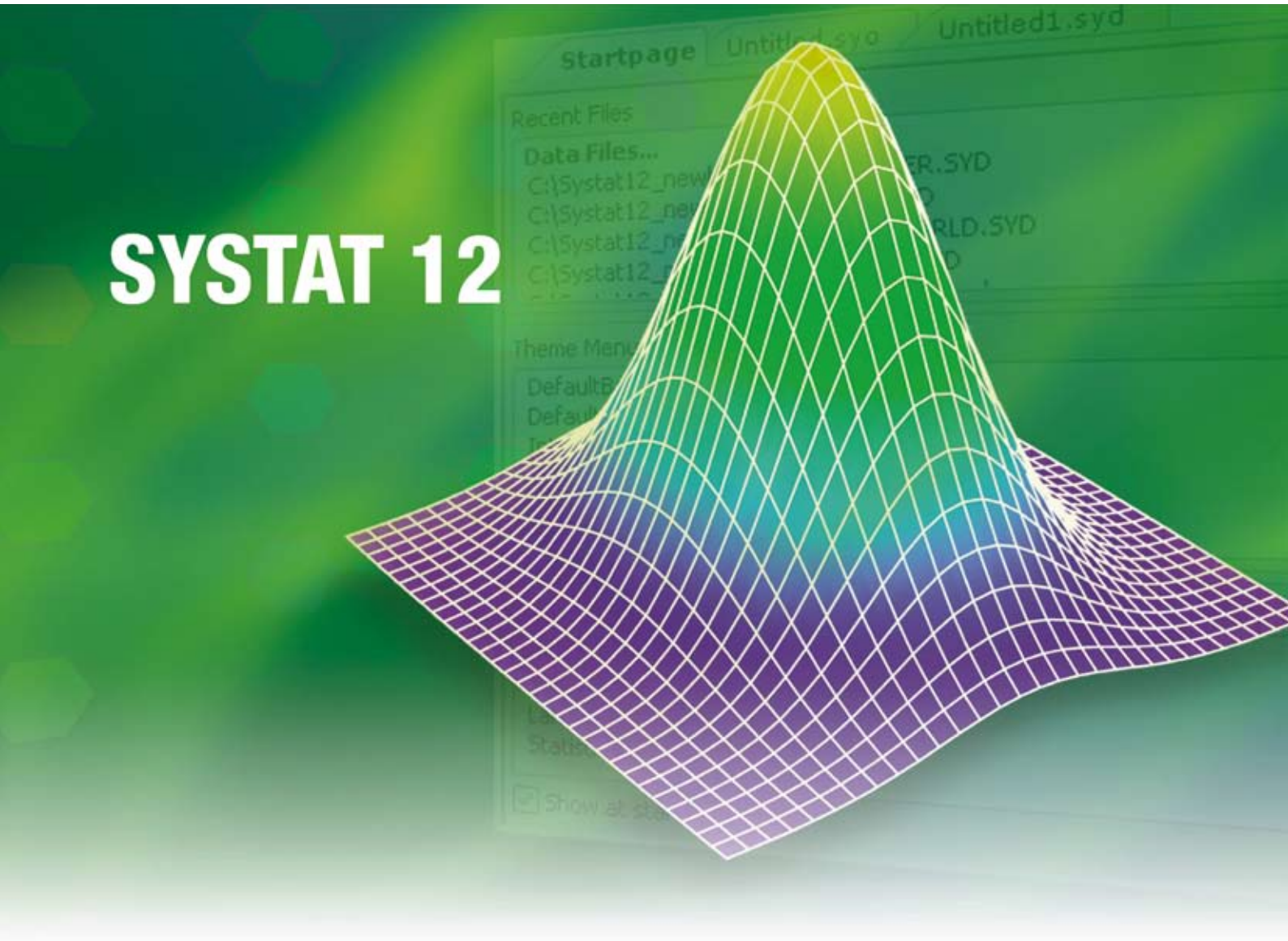


Mehr Statistik, Mehr Graphen, Weniger Aufwand!

SYSTAT 12: Mehr brauchen Sie nicht

SYSTAT hat alles, was Sie für die statistische Datenanalyse, die Durchführung von Simulationen und die Präsentation Ihrer Ergebnisse benötigen. Begleitet von ansprechenden Graphiken und ausgestattet mit einer anwenderfreundlichen Umgebung ist SYSTAT für den Statistik-Novizen ebenso geeignet, wie für den ‚alten Statistik-Hasen', der lieber mit der intuitiven Kommandozeile arbeitet.

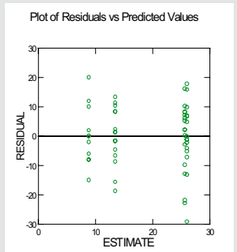
- Führen Sie umfängliche Analysen univariater und multivariater Daten basierend auf linearen, allgemeinen linearen oder linearen gemischten Modellen aus.
- Wählen Sie eine robuste Regressionsanalyse, wenn Ihre Daten nicht für konventionelle mehrfache Regressionsanalysen geeignet sind.
- Führen Sie problemlos verschiedene Simulationen durch - das breite Spektrum an univariaten und multivariaten, diskreten und kontinuierlichen Verteilungen für Berechnungen, Fitting und Modellierung sowie zur Generierung von Zufallszahlen macht's möglich.
- Erweitern Sie Ihre Simulationen und Bayes-Schätzungen dann mit generischem Rejection Sampling und Markov Ketten Monte Carlo-Algorithmen.

Ob Zeitreihen, Spatiale Statistiken, Mehrdimensionales Skalieren, Überlebens-,Testitem-, Cluster-, Korrespondenz-, Pfad-, oder Qualitätsanalyse, Klassifizierungsbäume, nicht-parametrische Statistiken **… SYSTAT hat, was Sie brauchen!**

MEHR STATISTIK …

Analysieren Sie komplexere Lineare Modelle

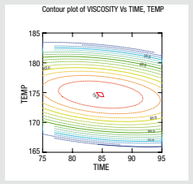
Beschränken Sie sich nicht auf Analysen linearer Modelle wie Regression, Varianzanalyse und Allgemeine Lineare Modelle (GLM), sondern arbeiten Sie auch mit korrelierten Daten, Cluster-Daten, abhängigen und heteroskedastischen Daten. Mit SYSTATs Analyse Gemischter Modelle analysieren Sie verschiedene Typen linearer gemischter Modelle wie Varianzkomponenten-Modelle, hierarchische gemischte Modelle und gemischte Regression.



Ob Sie verschiedene Schätztypen fester Effekt-Parameter und Varianzkomponenten oder aber Vorhersagen von Zufallseffekten ermitteln – Konfidenz-Intervalle und Hypothesen-Tests gehören dazu.

Nutzen Sie das erweiterte Spektrum der Multiplen Linearen Regression

Setzen Sie die Partielle Regression der Kleinsten Quadrate ein, wenn der Datensatz aus einer großen Zahl an Vorhersage-Variablen besteht, größer noch als die Anzahl an Fällen. SYSTAT bietet hierfür die zwei Standard-Algorithmen NIPALS und SIMPLS. Durch das Jackknife-Verfahren erhalten Sie Standardfehler der geschätzen Regressionskoeffizienten. Validieren Sie die angepasste Regression durch „leave-one-out" oder willkürliche Auslassung des Kreuztabellen-Verfahrens.
Sollte das Standardverfahren für mehrfache lineare Regression Probleme in Ihrem Datensatz offenlegen, wählen Sie eines von SYSTATs Verfahren zur Robusten Regression (LAD, LTS, LMS, S, M, Reihenfolge) zur Lösung dieses Problems.

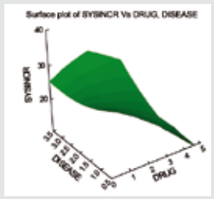


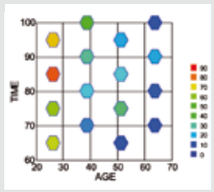
Entwickeln und optimieren Sie die Prozeßdurchführung

Wenn Sie Daten von einem gut aufgebauten Experiment nutzen, rufen Sie die Response Surface Optimization-Option auf, um die Faktorwerte und Prozeßeinstellungen herauszuarbeiten, mit denen die besten produktcharakteristischen Ergebnisse erzielt werden. Schätzen Sie Response Surface-Parameter, führen Sie Varianzanalyse und Signifikanz-Tests durch, berechnen Sie die optimalen Faktor-Einstellungen, erstellen Sie Kontur- und Desirability-Plots und führen Sie Ridge-Analysen durch.

Entdecken Sie schnell Gruppierungen in Daten

SYSTATs Cluster-Analyse gibt Ihnen eine breite Vielfalt an Distanz- und Ähnlichkeits-Matritzen, Cluster-Kriterien, Validierungs-Indizes und Schneide- und Stutz-Methoden, um aus den Daten eine zufriedenstellende hierarchische Klassifizierung oder Gruppierung zu erhalten. Nutzen Sie die neuen Verbindungs-Optionen, die auch uniform, k-Nachbarschaft, flexible Beta und gewichtete Verbindung einschließen. Validieren Sie Ihre Cluster mit fünf neuen Indizes. Schneiden Sie Cluster-Bäume basierend auf Blatt-Knoten und Baum-Höhen. Nutzen Sie den K-Median-Algorithmus als Alternative zum K-Mittelwert.





MEHR GRAPHEN …

Produzieren Sie attraktive Graphen schnell und bequem

Nutzen Sie SYSTATs breite Palette an wissenschaftlichen und technischen Graphen, um Ihre Analyse zu präsentieren, und passen Sie die Graphen nach Ihren Bedürfnissen an. Der Neue Interaktive Dialog ermöglicht es Ihnen, mehrere Aspekte Ihrer Graphiken in einem einzigen integrierten Dialog zu verändern.

Präsentieren Sie die Zusammenfassung großer Datensätze ansprechend und übersichtlich

Nutzen Sie SYSTATs Hexagonales Binning, eine Form des bivariaten Histogramms, als fortgeschrittene Version des Punktdiagramms für große Datensätze. Diagramme für hexagonales Binning teilen den Bildschirm in ein hexagonales Gitter auf. Der Durchmesser des Hexagons ist überall gleich, während die Farben von der Anzahl der x-y-Werte abhängen.

WENIGER AUFWAND!

Sparen Sie Zeit und Mühe mit der informativen Startseite

Auf der Startseite erhalten Sie direkten Zugang zu zuletzt genutzten Dateien, Tipps und Themen-Menüs, Sie haben Zugriff auf PDF-Dateien der Handbücher und Sie können Notizen auf den Notizblock schreiben.

Arbeiten Sie schneller mit der Kombination aus Kommandozeilen-Oberfläche und Menü-Dialog

Nutzen Sie das Zusammenspiel von Menü-Dialog und Kommandozeile für eine schnellere, effektivere Arbeit und entscheiden Sie selbst, wie Sie die beiden Anwendungen kombinieren.

Sparen Sie Zeit und vermeiden Sie Fehler mit der Autocomplete-Funktion

SYSTATs neue Autocomplete-Funktion erleichtert die Eingabe von Datei-, Variablen- und wichtigen Kommando-Namen. Sobald Sie etwas eintippen, gibt Ihnen SYSTAT automatisch eine Liste möglicher Namen zur Vervollständigung an. So können Sie Daten, Variablen- und Kommando-Namen schnell und leicht wieder aufrufen und vermeiden Tipp-Fehler.

Nutzen Sie Themen-Menüs und individuell zusammengesetzte Menüs und Werkzeugleisten, um Ihre Arbeitsschritte zu vereinfachen

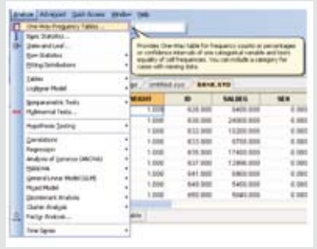
Ersetzen Sie das vorgegebene Menü durch ein Themen-Menü entsprechend Ihrem Anwendungsgebiet. Nutzen Sie SYSTATs Flexibilität beim Aufbau von Menüs und Werkzeugleisten, um diese an Ihre speziellen Arbeitsbereiche und Anforderungen anzupassen. Arrangieren Sie Menüs und Werkzeugleisten, um schnelleren Zugang zu Funktionen zu haben, die Sie häufig nutzen.

Erzeugen Sie noch flexiblere Reports mit längeren Variablen-Namen

Setzen Sie Variablen-Namen und Variablen-Label mit bis zu 256 Buchstaben ein - die Kürzung der Variablen-Namen im Report ist dann nicht mehr nötig. Exportieren Sie Ihren Report in passender Form, ohne aufwändiges Editieren.

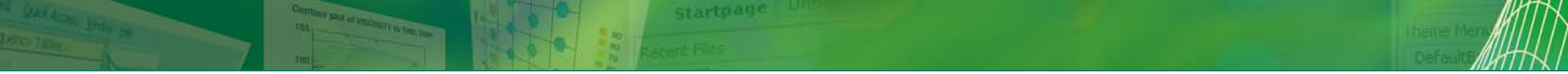
Beschleunigen Sie Ihre Analysen durch Daten- und Variablen-Tabs

Nutzen Sie bei Ihrer Analyse den Data- und den Variablen-Tab im Datei-Editor. Der Data-Tab zeigt die Daten im Arbeitsblatt an, der Variablen-Tab zeigt in zwei Fenstern (a) Informationen über die Variablen, wie Typ, Label, Feldweite, Dezimalstellen etc., (b) Angaben zu deren Verarbeitung, wie Gruppierungs- und Gewichtungsvariablen, Fall-Auswahl etc. Kommentare zu den Variablen können Sie in einem Tooltip ablesen, wenn Sie den Cursor im Data-Tab auf den Variablennamen bewegen. Damit erhalten Sie mit einem Mausklick wichtige Informationen über Ihre Daten und können Ihre Analysen beschleunigen.



Undo/Redo erleichtert die Daten-Bearbeitung

Nutzen Sie die neue Undo-Funktion im Daten-Editor, um bis zu 32 Schritte im gleichen Auswertungsgang rückgängig zu machen, oder rufen Sie Schritte erneut auf, um z.B. irrtümlich gelöschte Angaben wiederherzustellen.



Liste aller Funktionen in SYSTAT 12

Informieren Sie sich hier über alle statistischen Verfahren, Graphen und Optionen in SYSTAT 12. Soforthilfe zu allen Verfahren, die Sie benötigen bekommen Sie auch mit der Bubble-Hilfe!

STATISTICS

Descriptive Statistics

- Column
  - Arithmetic mean, median, sum and number of cases
  - Min, max, range and variance
  - Coefficient of variation, std err of mean
  - Adjustable confidence intervals of mean
  - Skewness, kurtosis, including standard errors
  - Shapiro-Wilk normality test
  - N- & P- Tiles: Cleveland, Weighted average 1, Weighted average 2, Weighted average 3, Closest, Empirical CDF, Empirical CDF (average),
  - Trimmed, Geometric, and Harmonic means
  - Stem-and-Leaf display
  - Resampling– Bootstrap, without replacement, Jackknife
  - Bootstrapped estimates, bias and confidence intervals
- Row
  - Arithmetic mean, median, sum and number of cases
  - Min, max, range and variance
  - Coefficient of variation, std err of mean
  - Adjustable confidence intervals of mean
  - Skewness, kurtosis, including standard errors
  - Shapiro-Wilk normality test
  - N- & P- Tiles: Cleveland, Weighted average 1, Weighted average 2, Weighted average 3, Empirical CDF, Empirical CDF (average), Closest
  - Trimmed, Geometric, and Harmonic means
  - Stem-and-Leaf display
  - Resampling – Bootstrap, without replacement, Jackknife
  - Bootstrapped estimates, bias and confidence intervals
- Multivariate skewness and kurtosis
  - Multivariate normality tests based on skewness and kurtosis; Henze-Zirkler test

Probability Distributions

- Computes probability density function, cumulative distribution function, inverse cumulative distribution function, and upper-tail probabilities for a wide variety of univariate discrete and continuous probability distributions
- Quick Graphs: graphs of the probability density function and the cumulative distribution function for continuous distributions
- Random sampling from univariate and multivariate distributions
- Fitting (univariate) distributions, Kolmogorov-Smirnov tests, Anderson-Darling tests, Function plots, Probability plots, Data transforms
- Quick Graphs: graphs of the respective observed and expected frequencies while fitting

- 11 distributions added in SYSTAT 12 making the total number of distributions handled to 44
  - Discrete – Uniform, Zipf, Geometric, Hypergeometric, Negative Binomial, Poisson, Binomial, Benford, Logarithmic series
  - Continuous – Triangular, Double exponential (Laplace), Cauchy, Gumbel, Gompertz, Lognormal, Pareto, Rayleigh, Inverse Gaussian, Lognormal, Uniform, Beta, Normal, Chi-square, Weibull, Exponential, Logistic, Gamma, Generalized lambda, Half-normal, Log-logistic, Erlang, Smallest extreme value, Studentized maximum modulus, Non-central t, Non-central chi-square, Non-central F
  - Multivariate distributions (random sampling): Multinomial, Bivariate exponential, Dirichlet, Multivariate normal, Wishart,

Crosstabulation and Measures of Association

- One-, two-, and multiway tables
- Row and column frequencies, percents, expected values and deviates
- List layouts, order categories, define intervals, including missing intervals
- 2 x 2 tables: likelihood ratio chi square, Yates', Fisher's, odds ratio, Yule's Q
- R x R tables: McNemar's test, Cohen's kappa
- R x C tables, unordered levels: phi, Cramer's V, contingency, Goodman - Kruskal's lambda, and uncertainty coefficients
- R x C ordered levels: Spearman's rho, Goodman-Kruskal's gamma, Kendall's tau-b, Stuart's tau-c, Somers' D
- Others: Mantel-Haenszel test, Cochran test
- Row-dependent and symmetric statistics
- Table of counts and percents
- Cell statistics
- Association measures for one- and two-way tables along with confidence intervals
- Standardized tables
- Resampling – Bootstrap, without replacement, Jackknife, bootstrapped estimates, bias, and confidence intervals

Correlations, Distances and Similarities

- Continuous data: Pearson correlations, covariance, SSCP
- Distance measures: Euclidean, city-block, Bray-Curtis, QSK
- Rank order data: Spearman, gamma, mu2, tau-b, tau-c
- Unordered data: phi, Cramer's V, contingency, Goodman-Kruskal's lambda, uncertainty coefficients
- Binomial data: S2, S3, S4, S5, S6, S7, Tetrachoric, Yule's Q, Hamman, Dice, Sneath, Ochiai, Kulczynski, Gower2
- Missing data: pairwise, listwise deletion, EM
- Hadi outlier detection and estimation
- Probabilities: Bonferroni, Dunn-Sidak
- Quick Graph: scatterplot matrix
- Resampling – Bootstrap, without replacement, Jackknife; bootstrapped estimates, bias, and confidence intervals in the case of Pearson correlations and rank-orderd data

Set and Canonical Correlation

- Whole, semi and bipartial set correlations
- Rao F, R-Square, Shrunk R-Square, T-Square, Shrunk T-Square, P-Square, Shrunk P-Square Within, between and inter set correlations
- Row/Column betas, standard errors, T-statistics and probabilities
- Stewart-Love canonical redundancy index
- Canonical coefficients, loadings and redundancies
- Varimax rotation
- Resampling – Bootstrap, without replacement, Jackknife

Missing Value Analysis

- EM Algorithm
- Regression imputation
- Save estimates, correlation, covariance, SSCP matrices
- Resampling – Bootstrap, without replacement, Jackknife

Loglinear Models

- Full maximum likelihood
- Pearson and likelihood ratio chi-square
- Expected values, lambda, SE lambda
- Covariance matrix, correlation matrix
- Deviates, Pearson deviates, likelihood deviates, Freeman Tukey deviates, log likelihood
- Resampling – Bootstrap, without replacement, Jackknife
- Dialog box with facility to type the desired model directly

Linear Regression

- Least-squares
  - Cross validation, saving residuals and diagnostics, Durbin-Watson statistic
  - Multiple linear regression
  - Prediction for new observations
  - Stepwise regression: automatic, customized and interactive stepping, partial correlations
  - AIC, AICc, BIC computation
  - Hypothesis testing, mixture models
  - Automatic outlier and influential point detection
  - Quick Graph: residuals vs. predicted values; fitted model plot in the case of one or two predictors (confidence and prediction intervals in the case of one predictor)
  - Resampling – Bootstrap, without replacement, Jackknife, Bootstrapped estimates, bias and confidence intervals
- Bayesian
  - Prior distribution - (multivariate) normal-gamma distribution
  - Bayes estimates and credible intervals for regression coefficients computed
  - Parameters of the posterior distribution provided
  - Plots of prior and posterior densities of regression coefficients
- Ridge
  - Two types of ridge coefficients: standardized coefficients and unstandardized coefficients
  - Quick Graph: A plot of the ridge factor against the ridge coefficients

Partial Least-Squares Regression

- NIPALS algorithm
- SIMPLS algorithm
- Crossvalidation
- Standard errors

Robust Regression

- Least Median of Squares (LMS) regression
- Rank Regression
- Least Trimmed Squares (LTS) regression
- M regression
- Scaled regression
- Least Absolute Deviation (LAD) regression

Logistic Regression

- Binary, multinomial, discrete choice and conditional
- AIC, AICc, BIC computation
- Robust standard errors
- Dummy variables and interactions
- Deciles of risk, quantiles and simulation
- Quick Graph: ROC curve for binary logistic regression
- Forward, backward, automatic and interactive stepwise regression

Probit Regression

- Dummy variables and interactions
- AIC, AICc, BIC computation

Nonlinear Regression

- Gauss-Newton, Quasi Newton, Simplex
- Output: predicted values, residuals, asymptotic standard errors and correlations, confidence curves and regions
- Special features: Cook-Weisberg confidence intervals, Wald intervals, Marquardting
- Robust estimation: absolute, power, trim, Huber, Hampel, t, bisquare, Ramsay, Andrews, Tukey
- Maximum likelihood estimation
- Piecewise regression, kinetic models, logistic model for quantal response data
- Exact derivatives
- Quick Graph: scatterplot with fitted curve
- Resampling – Bootstrap, without replacement, Jackknife

Two-Stage Least-Squares

- Heteroscedasticity-consistent standard errors

Smooth & Plot

- 126 non-parametric smoothers including LOESS
- Windows: fixed width or nearest neighbors
- Kernels: uniform, Epanechnikov, biweight, triweight, tricube, Gaussian, Cauchy
- Method: median, mean, polynomial, robust, trimmed mean
- Save predicted values and residuals
- Resampling – Bootstrap, without replacement, Jackknife

Mixed Model Analysis

- Variance components and linear mixed model structures
- Estimates of parameters by
  - Maximum likelihood (ML)
  - Restricted maximum likelihood (REML)
  - MIVQUE(0) in the case of variance components
  - ANOVA in the case of variance components
- Confidence intervals and hypothesis tests based on these estimates
- Structures of covariance matrix of random effects
  - Variance components
  - Diagonal
  - Compound symmetry
  - Unstructured
- Structures for error matrix:
  - Variance components
  - Compound symmetry
- AIC, AICc, BIC computation

Mixed Regression

- Hierarchical Linear Models (HLM)
- Specify effects as fixed or random
- Autocorrelated error structures
- Nested Models (2-Level): Repeated Measures, Clustered Data
- Unbalanced or balanced data
- Quick Graph: Scatterplot, histogram or scatterplot matrix of empirical Bayes estimates

Hypothesis Testing

- Mean: One-Sample z-test, Two-sample z-test, One-Sample t-test, Two-Sample t-test, Paired t-test, Poisson test with Bonferroni, Dunn-Sidak adjustments
- Variance: Single Variance, Equality of Two Variances, Equality of Several Variances
- Correlation: Zero Correlation, Specific Correlation, Equality of Two Correlations
- Proportion: Single Proportion, Equality of Two Proportions
- Appropriate Quick Graphs
- Resampling – Bootstrap, without replacement, Jackknife

ANOVA

- One-way ANOVA: multiple comparison tests, Bonferroni, Tukey-Kramer HSD, Scheffe, Fisher's LSD, Tukey's b, Students-Newman-Keuls, Duncan, R-E-G-W-Q, Hochberg's GT2, Gabriel,Tamhane T2, Games-Howell, Dunnett's T3, Sidak
- Two-way ANOVA: post hoc tests on least-squares means (Bonferroni, Tukey, LSD, Scheffe)
- Repeated measures: one-way, two or more factors, three or more factors
- Designs: unbalanced, randomized block, complete block, fractional factorial, mixed model, nested, split plot, Latin square, crossover and change over, Hotelling's T2
- ANCOVA
- Means model for missing cells designs
- AIC, AICc, BIC computation
- Automatic outlier and influential point detection
- Quick Graph: least -squares means
- Resampling – Bootstrap, without replacement, Jackknife
- Type I, II and III sums of squares
- Confidence intervals and hypothesis tests for Helmert, reverse Helmert, deviation and simple contrasts
- Options to test normality and homoscedasticity assumptions

General Linear Model

- Any general linear model Y = XB+e
- Any general linear hypothesis ABC' = D
- Mixed categorical and continuous variables
- Stepwise model building
- AIC, AICc, BIC computation
- Post-hoc tests
- Resampling – Bootstrap, without replacement, Jackknife
- See also linear regression and ANOVA

Quality Analysis

- Histogram, Pareto Chart, Box-and-Whisker Plot
- Process Capability Analysis
- Control Charts: Run Chart, Shewart Control Chart, Average Run Length, Operating Characteristic Curve, Cumulative Sum Chart, Moving Average, Expected Weighted Moving Average, X-MR Chart, Regression Chart, TSQ

Nonparametric Tests

- Independent samples: Kruskal-Wallis, two- sample Kolmogorov-Smirnov, Mann-Whitney
- Related variables; sign test, Wilcoxon signed rank test, Friedman test, Quade test,
- One-sample: Kolmogorov-Smirnov, Anderson-Darling test, Wald-Wolfowitz runs test
- Resampling – Bootstrap, without replacement, Jackknife

MANOVA

- Handles wide variety of designs
- Performs repeated measures analysis
- Means model for missing cells designs is available
- Within-group and between-group testing is now part of menus
- MANCOVA
- AIC, AICc, BIC computation
- Resampling – Bootstrap, without replacement, Jackknife

Factor Analysis

- Principal components, iterated principal axis, maximum likelihood
- Rotation: varimax, quartimax, equimax, orthomax, oblimin
- Resampling – Bootstrap, without replacement, Jackknife

Discriminant Analysis

- Classical Discriminant Analysis (Linear or quadratic)
  - Prior probabilities, contrasts
  - Output: F statistics, F matrix, eigenvalues, canonical correlations, canonical scores, classification matrix, Wilks's lambda, Lawley-Hotelling, Pillai and Wilks's trace, classification tables, including jackknifed, canonical variables, covariance and correlation matrix, posterior probabilities and Mahalanobis distances
  - Stepwise modeling: automatic, forward, backward and interactive stepping
  - Resampling – Bootstrap, without replacement, Jackknife
- Robust Discriminant Analysis
  - Useful when the data sets are suspected to contain outliers
  - Linear or quadratic analysis
  - Save the robust Mahalanobis distance, weights, and predicted group membership

Cluster Analysis

- Hierarchical
  - Distance measures: Euclidean, percent, gamma, Pearson, R-squared, Minkowski, chi-square, phi-square, absolute, Anderberg, Jaccard, Mahalanobis, RT, Russel, SS
  - Linkage methods: single, complete, centroid, average, median, Ward, flexible beta, k-neighborhood, uniform, weighted
  - Quick Graphs: dendrogram, matrix and polar
  - Resampling – Bootstrap, without replacement, Jackknife
- K-means and K-medians
  - Distance measures: Euclidean, MWSS, gamma, Pearson, R-squared, Minkowski, chi-square, phi-square, absolute, Mahalanobis
  - Quick Graphs: parallel coordinate and mean/std deviation profile plots
- Additive trees
  - Input: similarity, dissimilarity matrices
  - Quick Graph: dendrogram
- Five indices for cluster validity: RMSTTD, Dunn, Davies–Bouldin, Pseudo F, Pseudo T2
- Cutting cluster tree based on specified nodes and tree height

Correspondence Analysis

- Simple and multiple (raw data and data in tabular form)
- Quick Graphs: vector and casewise plots
- Resampling – Bootstrap, without replacement, Jackknife

Classification and Regression Trees

- Loss functions: least-squares, trimmed mean, LAD, phi coefficient, Gini index, twoing
- Quick Graph: unique tree mobile including split statistics
- and color coded subgroup densities (box, dot, dit, jitter, stripe)
- Resampling – Bootstrap, without replacement, Jackknife

Cronbach's Alpha

- Resampling – Bootstrap, without replacement, Jackknife

Test Item Analysis

- Classical analysis
- One- and two-parameter logistic model
- Quick Graph: item plot

Multidimensional Scaling

- Two-way scaling: Kruskal, Guttman, Young
- Three-way scaling: INDSCAL
- Non-metric unfolding
- EM estimation
- Power scaling for ratio data
- Quick Graphs: MDS plot, Shepard diagram

Partially Ordered Scalogram Analysis with Coordinates (POSAC)

- Guttman-Shye algorithm; automatic serialization
- Quick Graph: item plot
- Resampling – Bootstrap, without replacement, Jackknife

Perceptual Mapping

- MDPREF
- Preference mapping (vector, circle, ellipse)
- Procrustes and canonical rotations
- Quick Graph: biplots

Conjoint Analysis

- Monotonic, linear, log and power
- Stress and tau loss functions
- Quick Graph: utility function plot
- Resampling – Bootstrap, without replacement, Jackknife

Time Series

- Smoothing: LOWESS, moving average, running median, and exponential
- Seasonal adjustment
- Fourier and inverse Fourier transforms
- Box-Jenkins ARIMA model
- Specify autoregressive, difference and moving average parameters
- Forecast and standard errors
- Polynomially distributed lags
- Quick Graphs: series plot, autocorrelation, partial autocorrelation, cross correlation, periodogram
- Trend Analysis: Mann-Kendall test and Sen slope estimator for nonseasonal data
- Trend Analysis: Seasonal Kendall and Homogeneity tests with Sen slope estimator

Spatial Statistics

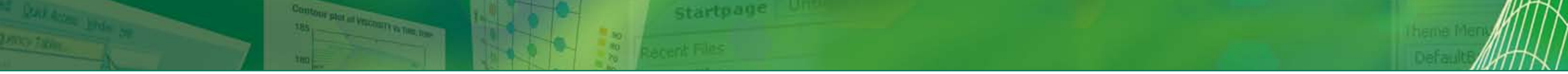
- 2D & 3D variogram, Kriging and simulation
- Variogram types: semi, covariance, correlogram, general relative, pairwise relative, semi-log, semimadogram
- Semivariogram models: spherical, exponential, gaussian, power and hole effect
- Kriging types: simple, ordinary, nonstationary and drift
- Quick Graphs: variogram and contour plot
- Resampling – Bootstrap, without replacement, Jackknife

Signal Detection Analysis

- Models: normal, Chi-square, exponential
- Quick Graph: receiver operating characteristic curve

Survival Analysis

- Kaplan-Meier, Nelson-Aalen and actuarial life tables with confidence intervals
- Turnbull KM estimation (EM)
- Cumulative hazards and log cumulative hazards
- Cox regression, parametric models: exponential, accelerated exponential, Weibull, accelerated Weibull, lognormal, log-logistic



- Type I, II and III censoring
- Stratification, time dependent covariates
- Forward, backward, automatic and interactive stepwise regression
- AIC, AICc, BIC computation
- Quick Graphs: survival function, Cox-Snell residual plot, quantile, reliability and hazard plots

Path Analysis (RAMONA)

- Analyze covariance or correlation matrices
- MWL (maximum Wishart likelihood)
- GLS (generalized least-squares)
- OLS (ordinary least-squares)
- ADFG (asymptotically distribution free estimate biased, Gramian)
- ADFU (unbiased)

Design of experiments

- Choose between Classic and Advanced DOE with dynamic wizard
- Optimal Designs
- Complete and incomplete factorial designs
- Latin square designs, 3-12 levels per factor
- Box and Hunter 2-level incomplete designs
- Taguchi designs
- Plackett and Burman designs
- Mixture: lattice, centroid, axial, screening
- Response surface designs: Box-Behnken and central composite designs

Response Surface Methods

- Fits a second degree polynomial to one or more responses on several factors
- Output: regression coefficients, analysis of variance, tests of significance
- Optimum factor settings using canonical (for each response) or desirability (for all responses jointly) analysis,
- Quick Graph: Desirability plots
- Contour and surface plots with fixed settings for one or more factors

Power Analysis

- Determine sample size to achieve a specified power
- Determine power for a single sample size or a range of sample sizes
- Proportions, correlations, t-tests, z-tests, ANOVA (one-way, two-way), generic designs
- Conforms to the Hypothesis tests on means and their various options
- Previously only for two-sided alternatives, now for one-sided alternatives also
- Quick Graph: power curve

2 GRAPHICS

General

- Use of Microsoft's 16M color palette.
- Flicker Free rendering of graphs in Graph Editor.
- Overlay an unlimited number of graphs.
- Automatically plot and color subgroups side-by-side or overlaid.
- Graph Gallery with a variety of graph templates.
- Ability to view multiple graphs facilitating comparison of two or more graphs.
- Interactive changing of Graph properties with support for Begin-End graphs and Quick Graphs.
- Dynamic Explorer
  - Experience better dynamic control of orientation of 3D graphs with automatic rotation, step-by-step rotation or rotation using the mouse.
  - Zoom graphs (in the direction of each axis or all together).
- Graph toolbar
  - Selection tools for selecting a subset of plot points.
  - Zoom in & Zoom out feature with selection zooming or step zooming tools
  - Pan tool for moving (drag-and-drop) the graph within the Graph Editor.
  - Realign multiple frames to default layout with a single click of the mouse.
- Annotation tools
  - Annotation objects like Rectangle, Circle, Ellipse, Polyline, Arrow etc. can be added to the graph interactively to glorify the graphs drawn.
  - Annotation objects can be selected, repositioned and resized quite easily.
  - Annotation properties like Line Color, Style, Thickness and Fill Color, Pattern etc. can be set and modified easily.
  - Annotation Text can be added interactively to attach meaningful contents to graph elements which need extra attention.
  - Annotation text font properties can be set and modified conveniently.
- Status bar help
  - Tooltips showing each individual element name (for e.g. Frame, X-axis, Legend, Bar, Scatterplot, Histogram, etc.) in the status bar on mouse hover in the Graph Editor.
  - View properties of elements like case ID and the value against variable names for all the axes.
- Save charts to BMP, PS, EPS, EMF, WMF, JPG, PICT, GIF, TIFF, PNG with options for setting, resolution, size, format and color translation.
- Frame tracker for identifying individual frames that can then be resized and/or repositioned..
- Object tracker for identifying individual objects in a graph that can then be edited using the Graph Interactivity feature.
- Reposition the graph title using the mouse (drag-and-drop).

Global Options

- Decorate your graphs with different background & border themes.
- Threshold limit and grid cuts for automatic hexagonal binning
- Location, facet, eye (3-D rotation angle), scale and appearance settings for all graphs through the dialog as well as command line interface.
- Ability to change the image type of the graphs appearing in the Output, like PNG, BMP, JPEG, GIF or EMF.

Bar, dot, line, pie, profile and pyramid charts (Summary Charts)

- Use medians instead of mean for Bar, Dot, Line, Profile and Pyramid graphs
- Bar: 2-D, 3-D, stacked, error bars, repeated measures, percent, polar, mirror, mosaic
- Dot: 2-D, 3-D, line connected, error bars, repeated measures, percent, polar, mirror
- Line: 2-D, 3-D, errors, repeated measures, percent, mirror
- Pie: 2-D, 3-D, concentric rings, offset slice
- Profile: 2-D, 3-D, stacked, repeated measures, percent, mirror
- Pyramid: 2-D, 3-D, repeated measures, percent, mirror
- Base line (Anchor) is drawn at the specified base value for bar and pyramid charts
- Distinct stack and percentage options for univariate bar charts

Histograms, box and density plots

- 2-D displays
  - Box plot: box and whisker, notched, box with dot.
  - Dot densities: dit, symmetric dit (dot), jitter, fuzzy and stripe.
- 2-D/3-D displays
  - Histogram: counts, cumulative counts, control number of bars or bars widths
  - Normal and kernel density functions
  - Contour and mosaic plots
  - Pseudo 3-D displays, mirror plots

Scatterplots, Quantile and Probability plots

- Repeated measures, contour and tiled plots
- Smoothers (2-D/3-D): linear, quadratic, DWLS, step, NEXPO, inverse, Andrews, bisquare, Huber and Kriging. The tension parameter can be specified where applicable
- Smoother residuals
- Option for limiting smoother to data range.
- Line connecting plot points, minimum spanning tree, traveling salesman path, Voronoi tessellation, Delaunay triangulation, vectors, spikes and convex hull
- Size points by influence, sunflower symbols
- Border 2d graph for Plot, Probability Plot and Quantile Plot.

Other 2-D plot and SPLOM options

- Hexagonal binning with desired number of cuts
- 38 theoretical densities for probability plots
- Smoothers: log, power, lowess, spline, mean, median, mode, midrange, trimmed mean
- Confidence interval contours: bivariate ellipsoid, bivariate centroid, regression line, kernel density
- Display univariate densities on borders: histogram, box, box/dot, dot, dit, frequency polygon, normal, kernel, fuzzy, stripe, jitter
- High-low-close plots (2-D)
- Mirror plots (2-D)

Maps

- Present statistical data on maps
- US: states, counties, metro areas, census tracts, and related demographics
- World: continents, nations, West European provinces
- Eleven geographic projections
- Create map (shape) files

Additional graphs

- Multiplots: based on Trellis plots, multiple displays based on grouping variables for bar, dot, line, profile, pyramid, scatterplot, probability plot and quantile plot
- Icon plots: Chernoff faces, Fourier blobs, histograms, profiles, thermometers, weather vanes, stars and arrows
- Parallel coordinate and Andrews' Fourier plots
- Function plots: specify any function (2D, 3D, 4D)

Coordinates and Projection

- Rectangular, polar, triangular and spherical coordinates
- Geographic projections: gnomonic, stereographic, Mercator, orthographic, Lambert, Robinson, sinusoidal, Miller, Peters, fish-eye

Page view

- Advanced page view that lets you position & resize the graphs, titles & other annotation objects for printing.

Interactive graphics

- Single dialog box with context sensitive tabs for editing individual components of the graph: Graph, Frame, Axis, Legend and Element. The changes get reflected instantly.
- Graph and Frame
  - Change background color, title, font, coordinates and projections
  - Zoom/resize, rotate and reposition graphs/frames
  - Change the row-column matrix dimension of graph frames in multiple graphs
  - Change summary charts like bar, dot, line, profile and pyramid from one type to another
  - Change related density types from one type to another
- Axes
  - Control axis title, font for title and tick labels, number of ticks and number of pips
  - Modify line aesthetics like color, style, and thickness
  - Set limit lines and grid lines
  - Modify minimum and maximum scale for an axis
  - Transform the scale to the log or power scale
- Element
  - Modify element aesthetics like line color, style, thickness, fill color, pattern, symbol, type, size and boundary
  - Change error bar settings, height parameter, base line, bar width and label settings for summary charts
  - Separate a slice, change to an attention map (ring), display slice labels, and transform the scale in pie charts
  - Change smoothers, residuals, connectors, partitions, specify vector lines, vertical spikes, confidence contours and hexagonal binning for scatterplots.
  - Set the surface type, gradient and wireframe for 3-D scatterplots and function plots.
- Legend
  - Modify legend titles, location, layout (number of rows and columns) and labels.

3 GENERAL FEATURES

Graphical User Interface

- The Graphical User Interface is a single window with panes and tabs for displaying output, data, graph and command files conveniently
- Startpage to access what's new in the current version, recent files, interface themes and manuals, get useful tips, and scribble notes
- Variable Editor for editing various properties of variables in the data file; copy-paste all or some properties of any number of variables
- View value labels or data values in the Data Editor
- View variable statistics and histogram for any variable on right-click
- Window menu to view multiple tabs in the Viewspace simultaneously
- Quick Access menu containing all commonly used graphical and statistical tools
- Examples tab with one-click access to all the examples in the user manual
- Add your own examples to the Examples tab
- Extensive use of drag-and-drop and right-click mouse functionality
- Faster processing speed
- Fully customizable main and context (right-click) menus; set captions, accelerator keys and button images
- Simple and intuitive default menu structure; option to switch to other menu structures supplied, (downloadable or created)
- Advanced customizable status bar with items to toggle global settings and data processing conditions
- Record and play menu and dialog actions; create new menu items with links to these
- Create your own menu items linked to command files or sets of commands
- Several toolbars with over 250 fully customizable tools (buttons)
- Specify/modify keyboard shortcuts
- Set menu font and animation
- Create new popup menus in the Menu Bar
- Create and apply interface themes that capture the menu structure and content, status bar content, keyboard shortcuts, output scheme, pane dimensions & locations, toolbar positions and content, recent files, and user menu items
- Use themes supplied with the product and download additional themes from the Internet
- Customize resources (including errors and warning messages, status bar and bubble help content, toolbars and dialogs) and link them to an interface theme
- Numerous global options for each aspect of the application
- Move the active tab to the beginning of the Viewspace/Commandspace
- Specify file comments in the Data Editor
- Command line and dialog interface interlinked so that the hypotheses features can be conveniently accessed
- Crash recovery and rescue system to retrieve any unsaved data command and output files in the unlikely event of a crash or improper shut down
- Dialog boxes
  - Tabbed dialog boxes where various options (e.g. Options, Results and various other settings) come under different tabs of the main dialog box
  - Drag-and-drop facility, double-click facility, multiple contiguous and non-contiguous selection using Ctrl and Shift keys, as well as context (right-click) menu to ease the selection of variables in different dialog boxes
  - All the input fields in dialogs show tool tips with range values
  - Icons to indicate Category variables in dialog boxes and Data Editor, and frequency as well as weight variables in the Data Editor
  - Variable labels as tooltip on mouse hover
  - Keyboard shortcuts for dialog items
  - Grid controls for entering any number of rows of input, with keyboard shortcuts for ease of use
  - ‚What's this' help for each item in the dialog box

Data Management

- Data file format with compression; backward compatibility provided
- Import/export data formats like Statview, Stata, Statistica, JMP, Minitab and S+
- Also import/export ASCII, Microsoft Excel™, SAS®, SPSS®, ODBC, dBASE® and ArcView® file formats
- Use numeric, string or data-time variables
- Specify date as well as time formats simultaneously for any given variable
- Store variable labels, comments, width and format, value labels, file comments as well as category, frequency, weight and ID variable information to the data file
- Global options to turn off saving category and ID variable information to the data file
- View multiple data files and activate any given data file from among the open data files for editing and/or analysis
- Paste data as text, paste variable properties, paste data with custom row and column separators, copy variables to the clipboard and insert them anywhere in the Data Editor
- Use up to 32,000 variables, unlimited cases
- Field width of up to 23 with up to 14 decimal places for numeric data, up to 256 characters for string data
- Sort or transpose data; merge or append files
- Label and order categories
- Manage missing values
- Rank, center, standardize and trim variables
- Save data sets to temporary files that are automatically deleted on exit
- Compute new variables: arithmetic operators, relational operators, logical operators, IF…THEN transformations, trigonometric, exponential, logarithmic, multivariate, character, date and time functions
- Select cases based on a specified condition and invert case selection
- Save only selected cases or specified variables
- Recode variables instantly and conveniently; option to replace or create variables with recoded values
- Global option to trim leading and trailing spaces in string variable data
- Matrix computations through the dialog as well as command line interface, available for use in conjunction with other statistical features
- Use BASIC control structure to manipulate data: read, select, sort, transform, print, save, create random samples, and so on.
- Create temporary variables and arrays
- Use Mersenne-Twister or Wichman-Hill random number generator while generating random samples

Command editor

- Autocomplete and automatic coloring of commands
- Open multiple command files
- Obtain help for any phrase simply by typing it and using the context menu

Command Language

- Complete coverage of menu functionality
- Interactive command entry speeds analysis
- Command files to automate repetitive tasks
- Command log records session history
- Streamlined command syntax with informative error and warning messages wherever applicable
- Create command templates with token variables
- Commands related to Basic Statistics globally available
- Insert comments at the end of a command line

Output

- Headers, footers, page setup and print preview with multiple view options
- HTML based output with tabular and ASCII modes; tables can be directly and conveniently copied to external applications without distortion
- Collapsible links for each section of the output
- Global options
  - Specify the field width and number of decimal places
  - Short, medium or long statistical output
  - Define font style and size for tabular as well as ASCII output formats; font sizes can be condensed to be as small as desired
  - Display variable labels, names or both
  - Display value labels, data values or both
  - Wrap and/or truncate text in tables appearing in the output, at the desired number of characters
  - Control the display of statistical Quick Graphs
  - Global option to echo commands in the output
- Page width: Narrow, Wide or None (Infinite page width)
  - Maximum number of characters in a row and number of columns in tables dynamically determined based on the page width and font settings
  - Tables with excess columns will be split into as many parts as required with the row and column headers appended to each part
- Global output scheme options for each component of the output; settings saved to the interface theme
- Save output in the SYSTAT (.syo), text, RTF, HTML or single-page HTML (.mht) formats.
- Output can be resumed from previous sessions using the SYSTAT format output file, which contains the command log and data file information.

Output Organizer™

- Index for easy output navigation and manipulation
- Combined, formatted statistical output and graphs
- Right-click on any data file node to view it or set it active for editing or using in an analysis
- Organize output based on the data file used for a given section of the output
- Set detailed output organizer node captions

Help

- Extensive printed/pdf user documentation containing 8 volume set of SYSTAT manuals: Getting Started, Statistics I, Statistics II, Statistics III, Statistics IV, Graphics, Data, Language Reference
- Extensive Online Help System with Index, Search, Favorites lists.
- Acronym expansions, data file references in the Online Help system
- Knowledge base (FAQ) with answers to various queries raised by users
- Tutorials with step-by-step instructions on using various features
- Status bar help and ‚Bubble Help' regarding a given feature on mouse hover on the corresponding menu item
- Statistics Glossary
- Context sensitive help on pressing F1 on any item in the interface

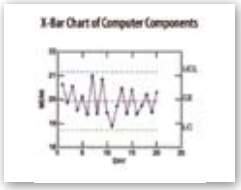
Neue Funktionen in SYSTAT 12 sind rot markiert

SYSTEMANFORDERUNGEN

Grundlegende Hardware- und Software-Anforderungen für SYSTAT sind:

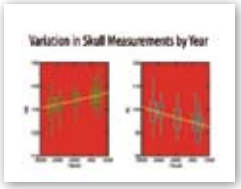
- Windows 32 bit (Vista, XP, 2000, 2000 Server, 2003 Server)
- Separate Installation für
  Windows 64 bit (Vista, XP, 2003 Server)
  Windows 98/ME/NT
- Pentium Rechner oder vergleichbares Level
- 128 MB RAM freier Speicher (512 MB empfohlen)
- 220 MB freier Diskettenspeicher
- CD-ROM-Laufwerk
- SVGA Adapter und Monitor
- Internet Explorer 6 oder vergleichbar

SYSTAT unterstützt alle Bereiche wissenschaftlicher und technischer Forschung

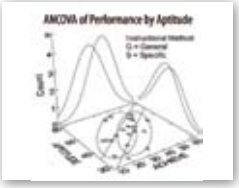


Produktion: Qualitätsverbesserung
SYSTAT unterstützt Sie bei der Überwachung Ihres Produktionsprozesses. Hier zeigt ein X-Balken-QuickGraph den durchschnittlichen Widerstand von fünf zufällig ausgesuchten Computer-Komponenten, gemessen über einen Zeitraum von 20 Produktionstagen. Das X-Balken-Diagramm zeigt, daß die Komponenten gut innerhalb des Kontrollbereichs liegen.

Epidemiologie: Tuberkulose-Vorfälle
Mit SYSTAT können Sie geographische und statistische Daten kombinieren, um aussagefähige Karten zu erstellen. Diese Graphik setzt Farbkodierungen zur Hervorhebung hoher Raten an Tuberkulose-Fällen in Europa ein.

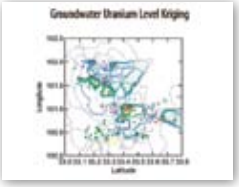


Archäologie: Evolution der Schädeldimensionen
SYSTATS MANOVA-Prozedur zeigt signifikante Variationen zwischen Zeitperioden in diesen Messungen an männlichen ägyptischen Schädeln. Die multivariaten Ergebnisse werden durch die univariate ANOVA, die hier in diesem kombinierten Regressions Box-Diagramm dargestellt ist, untermauert.

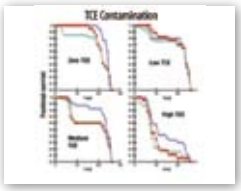


Psychologie: Lehrmethoden und Lernen
In diesem Experiment, bei dem die Effektivität zwei verschiedener Lehrmethoden verglichen wurde, war eine Analyse der Kovarianz (ANCOVA) notwendig, um der Wirkung von Begabung Rechnung zu tragen.

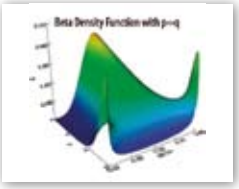
Medizinische Forschung: Klinische Versuche
Die Varianzanalyse mit wiederholten Messungen (ANOVA) wurde hier eingesetzt, um zu untersuchen, wie sich vier verschiedene Wirkstoffbehandlungen auf die Höhe der Bluthistamine von Hunden auswirken.



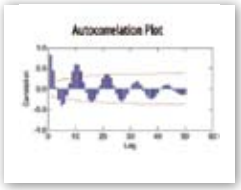
Geologie: Schätzung der Uran-Reserven aus dem Grundwasser
Mit Hilfe von SYSTATs räumlichem Statistik-Kriging-Schätzer konnte ein Modell über potentielle Uran-Reserven erstellt werden. Die Krig-Kontur, auf die die tatsächlichen Uranmengen-Werte aufgetragen wurden, zeigt, daß sich die höchste Konzentration in dem Gebiet nahe dem Längengrad 101 und dem Breitengrad 33,4 befindet.



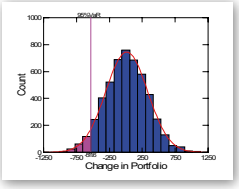
Umweltwissenschaften: TCE-Kontaminierung
Diese Überlebensanalyse-Diagramme beschreiben die Wirkung vier verschiedener TCE-Kontaminierungsgrade auf Vallisneria Americana. Die Diagramme zeigen deutlich, daß höhere Anteile an TCE die Überlebensraten geschlechtsübergreifend reduzieren.



Statistik: Theoretische Verteilungen
Mit SYSTATs integrierten statistischen Funktionen, wie z.B. dieser Beta-Dichte, vergleichen Sie Theorien mit Experimenten. SYSTAT stellt Dichte-, kumulative und inverse Funktionen für 28 Verteilungen sowie Anpassungsfunktionen für 25 Verteilungen zur Verfügung und bietet die Möglichkeit, Stichproben aus 33 Verteilungen zu ziehen.



Astronomie: Sonnenfleckenzyklen
Werfen Sie einen schnellen Blick auf Ihre Daten, bevor Sie tiefergehende Forschungen betreiben. Dieser Autokorrelationsfunktions-QuickGraph erzeugt die zyklischen Muster, die Sonnenflecken zeigen. Die Peaks, die sich oberhalb der Konfidenzbereiche kreuzen, weisen auf signifikante Korrelationen über die Zeit hin.



Banking und Finance: Risk Management
SYSTATs Monte-Carlo-Modul wird u.a. zur Berechnung des Value at Risk (VaR) eingesetzt. Hier betrachten wir ein Portfolio aus Optionen zweier korrelierter Aktien mit dem Anfangswert 2800. Eine Stichprobe von 5000 wurde entsprechend der Verteilung der Veränderungen im Portfolio mit Zeitintervallen von 10 Tagen und einem 10-Tage 95 % VaR (= 511.6) simuliert. Der Graph zeigt ein Histogramm der Veränderungen im Portfolio und eine geglättete Version.

„**SYSTAT 12** bietet eine Vielzahl an Standardfunktionen, die kein anderes Paket ohne teure Add-On-Module bieten kann. Zu den überzeugensten Funktionen gehören für mich die QuickGraphs, die uns allein dadurch, dass sie die Daten visuell darstellen zu besseren Statistikern machen. … Vielleicht die größte Verbesserung in SYSTAT 12 ist der wirklich beeindruckende Ausgabe-Report: Alles, von Häufigkeits- bis zu Faktoranalyse-Ergebnissen, ist sofort geeignet für die Weiterleitung an Kollegen oder die Veröffentlichung in Publikationen und in Farbe sieht es noch viel besser aus!... Es ist auch möglich, einen Datensatz zu betrachten, während ein anderer analysiert wird – das spart viel Zeit.

Egal, welches Statistikpaket ein Statistiker regelmäßig benutzt, es lohnt sich auf jeden Fall, eine Kopie von SYSTAT zu haben, allein schon aus dem Grund (und das ist nur einer von vielen), dass es erstklassige und unübertroffene Graphiken bietet".

Robert T. Brennan, Ed. D., Research Associate in Sozialmedizin
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