



SPSS



**Statistics for
Data Analysis**

WHO WE ARE

SPS is an Italian center of statistical data analysis with more than 20 years of experience.

SPS was born in 1994 as SPSS Italia and it was the only reseller in Italy for SPSS software suite, authorised by SPSS inc.

Today SPS is an IBM Gold Business Partner, Software Support Provider and Expert Level in Data Science & Business Analytics.

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DATASHEET

Regression

Statistics for Data Analysis

Organizations can solve a wide array of business and research problems with the solution [Statistics for Data Analysis](#).

Compared to other statistical software, the solution is easier to use, has a lower total cost of ownership and more comprehensively addresses the entire analytical process, from planning to data collection to analysis, reporting and deployment.

Organizations of all types rely on Statistics for Data Analysis to help increase revenue, outmaneuver competitors, conduct research and make better decisions. With decades of built-in expertise and innovation, it's a leading choice for reliable statistical analysis.

Statistics Base is part of the solution Statistics for Data Analysis, which consists of:

- Software license
- Add-On
- SPS Service Program

This comprehensive, easy-to-use solution includes many different procedures and tests to help users solve complex business and research challenges.

Highlights Statistics for Data Analysis

- Get support through every step of the analytical process.
- Carry out essential analyses from an intuitive graphical interface.
- Select from more than a dozen integrated products to make specialized analyses faster and easier.

Statistics for Data Analysis

The solution analytical capabilities to meet the analysis requirements of any type of organization, from basic tools for solving common problems to advanced analytical techniques that enable all type of organization to address complex challenges.

Statistics for Data Analysis can help you:

- Support business decisions with data-based analytics for improved outcomes.
 - Be more confident in your results by incorporating data from many different sources, including geospatial information, in your analysis and using proven, tested techniques to perform your analysis.
 - Save time and effort with capabilities that enable experienced analysts to develop procedures or dialogs that others can use to speed through repetitive tasks.
 - Give results greater impact by using visualization capabilities that clearly show others the significance of your findings.
- Analyze your data with new and advanced statistics, including a variety of new features within UNIANOVA methods
 - Integrate better with third-party applications, including stronger integration with Microsoft Office
 - Save time and effort with productivity enhancements:
 - More attractive and modern-looking charts in Chartbuilder
 - New groundbreaking features in Statistics Amos 25
 - Data and syntax editor enhancements
 - Accessibility improvements for the visually impaired
 - Updated merge user interface
 - Simplified toolbars

Statistics for Data Analysis can access quickly, manage and analyze any kind of dataset, including survey data, corporate databases or data downloaded from the web.

In addition, the software can process Unicode data. This eliminates variability in data due to language-specific encoding and enables your organization to view, analyze and share data written in multiple languages.

Statistics Regression

Datasheet

Highlights

- Predict categorical outcomes with more than two categories.
- Easily classify your data into two groups.
- Estimate the parameters of nonlinear models.
- Give more weight to measurements within a series.
- Control correlations between predictor variables and error terms.
- Evaluate the value of stimuli.

Apply more sophisticated models to your data using a wide range of nonlinear regression procedures

Use the range of nonlinear modeling procedures in Statistics Regression to apply more sophisticated models to your data, whether you work in business, academia or government.

Predict categorical outcomes with more than two categories

With multinomial logistic regression (MLR), you are free from constraints such as yes/no answers. For example, you can model which factors predict if the customer buys product A, product B or product C.

Easily classify your data into two groups

Use binary logistic regression to predict dichotomous variables such as buy or not buy and vote or not vote. This procedure offers stepwise methods to select the main and interaction effects that best predict your response variable.

Control your model

Have more control over your model and your model expression by using constrained and unconstrained nonlinear regression procedures. These procedures provide two methods for estimating parameters of nonlinear models. The Levenberg-Marquardt algorithm analyzes unconstrained models. The sequential quadratic programming algorithm enables you to specify constraints on parameter estimates, provide your own loss function, and get bootstrap estimates of standard errors.

Statistics Regression

Datasheet

Use alternative procedures to meet assumptions

When your data do not meet the statistical assumptions for ordinary least squares, use weighted least squares (WLS) or two-stage least squares (2SLS). Give more weight to measurements within a series by using WLS, and use 2SLS to control for correlations between predictor variables and error terms that often occur with time-based data.

Find the best stimuli

Perform probit and logit response modeling to analyze the potency of responses to stimuli, such as medicine doses, prices or incentives. Probit evaluates the value of the stimuli using a logit or probit transformation of the proportion responding.

Our suite of statistical software is now available in three editions: IBM SPSS Statistics Standard, IBM SPSS Statistics Professional and IBM SPSS Statistics Premium. By grouping essential capabilities, these editions provide an efficient way to ensure that your entire team or department has the features and functionality they need to perform the analyses that contribute to your organization's success.

SPSS Regression is available for installation as client-only software but, for greater performance and scalability, a server-based version is also available.

Statistics Regression Features

Multinomial logistic regression (MLR)

Regresses a categorical dependent variable with more than two categories on a set of independent variables

- Control the values of the algorithm-tuning parameters using the CRITERIA subcommand
- Include interaction terms
- Customize hypotheses by directly specifying null hypotheses as linear combinations of parameters, using the TEST subcommand
- Specify the dispersion scaling value by using the SCALE subcommand
- Build equations with or without a constant
- Use a confidence interval for odds ratios
- Save the following statistics: Predicted probability, predicted response category, probability of the predicted response category, and probability of the actual response category
- Specify the reference category in the dependent variables
- Handle very large problems
- Find the best predictor from dozens of possible predictors using stepwise functionality
 - Find predictors using forward entry, backward elimination, forward stepwise, or backward stepwise
 - Opt to select a rule for effect entry or removal from the analysis
 - Base entry or removal on satisfying the hierarchy requirement for all effects, for factor-only effects, or for satisfying the containment requirement for all effects
 - Optionally, perform entry or removal without satisfying the hierarchy or containment requirement for any effects in the model
- Use Score and Wald methods, which help you more quickly reach results if you have a large number of predictors
- Assess model fit using Akaike information criterion (AIC) and Bayesian information criterion (BIC; also called Schwarz Bayesian Criterion, or SBC)
- Choose from the following diagnostics for the classification table:

- Percent concordance
- Percent ties
- Percent discordance
- C-value for logistic mode
- Somer's D
- Gamma
- Tau-a statistics

Binary logistic regression

Regresses a dichotomous dependent variable on a set of independent variables

- Use forward/backward stepwise and forced entry modelling
- Transform categorical variables by using deviation contrasts, simple comparison, difference (reverse Helmert) contrasts, Helmert contrasts, polynomial contrasts, comparison of adjacent categories, user-defined contrasts, or indicator variables
- Select criteria for model building: Probability of score statistic for entry, probability of Wald, or likelihood ratio statistic for removal
- Save the following statistics: Predicted probability and group, residuals, deviance values, logit, Studentized and standardized residuals, leverage value, analog of Cook's influence statistic, and difference in Beta
- Export the model using XML

Constrained nonlinear regression (CNLR)

Uses linear and nonlinear constraints on any combination of parameters

- Save predicted values, residuals, and derivatives
- Choose numerical or user-specified derivatives

Nonlinear regression (NLR)

Estimates models with arbitrary relationships between independent and dependent variables using iterative estimation algorithms

- Specify loss function options
- Use bootstrap estimates of standard errors

Weighted least squares (WLS)

Gives more weight to measurements within a series

- Calculate weights based on source variable and Delta values or apply from an existing series
- Select output for calculated weights: Log-likelihood functions for each value of Delta; R, R², adjusted R², standard errors, analysis of variance, and *t* tests of individual coefficient for Delta value with maximized log-likelihood function• Display output in pivot tables

Two-stage least squares (2SLS)

Helps control for correlations between predictor variables and error terms

- Use structural equations and instrumental variables
- Set control for correlations between predictor variables and error terms
- Display output in pivot tables

Probit

Evaluates the value of stimuli using a logit or probit transformation of the proportion responding

- Transform predictors: Base 10, natural, or user-specified base
- Allow for natural response rate estimates or specify them
- Use algorithm control parameters: Convergence, iteration limit, and heterogeneity criterion probability
- Select from the following statistics: Frequencies, fiducial confidence intervals, relative median potency, test of parallelism, plots of observed probits, or logits
- Display output in pivot tables

Statistics for Data Analysis solution

Add more analytical power, as you need it, with optional modules and stand-alone software from the Statistics for Data Analysis family.

Statistics Base

Statistics Base includes the core capabilities to take the analytical process from start to finish. It is easy to use and includes a broad range of procedures and techniques to increase revenue, outperform competitors, conduct research and make better decisions.

Statistics Advanced

Statistics Advanced includes these powerful multivariate techniques: generalized linear models (GENLIN), generalized estimating equations (GEE), mixed level models, general linear mixed models (GLMM), variance component estimation, MANOVA, Kaplan-Meier estimation, Cox regression, hiloglinear, loglinear and survival analysis.

Statistics Bootstrapping

Statistics Bootstrapping enables researchers and analysts to use bootstrapping techniques on a number of tests contained in Statistics for Data Analysis modules. This provides an efficient way to ensure that your models are stable and reliable. With Statistics Bootstrapping, you can reliably estimate the standard errors and confidence intervals of a population parameter like a mean, median, proportion, odds ratio, correlation coefficient, regression coefficient and numerous.

Statistics Categories

Unleash the full potential of your categorical data through perceptual maps with optimal scaling and dimension reduction techniques. This add-on module provides you with everything you need to analyze and interpret multivariate data and their relationships more completely.

Statistics Complex Samples

Incorporate complex sample designs into data analysis for more accurate analysis of complex sample data. Statistics Complex Samples, with specialized planning tools and statistics, reduces the risk of reaching incorrect or misleading inferences for stratified, clustered or multistage sampling.

Statistics Conjoint

Statistics Conjoint helps market researchers develop successful products. By performing conjoint analysis, you learn what product attributes are important in the consumer's mind and what the most preferred attribute levels are, and can perform pricing studies and brand equity studies.

Statistics Tables

Use Statistics Tables to present survey, customer satisfaction, polling and compliance reporting results. Features such as a table builder preview, included inferential statistics and data management capabilities make it easy to clearly communicate your results.

Statistics Preparation

With Statistics Preparation, you gain several procedures that facilitate the data preparation process. This add-on module enables you to easily identify suspicious and invalid cases, variables and data values; view patterns of missing data; summarize variable distributions to get your data ready for analysis; and more accurately work with algorithms designed for nominal attributes.

Statistics Decision Trees

Create highly visual classification and decision trees directly within Statistics for Data Analysis for segmentation, stratification, prediction, data reduction and variable screening, interaction identification, category merging and discretizing continuous variables. Highly visual trees enable you to present results in an intuitive manner.

Statistics Direct Marketing

Statistics Direct Marketing helps marketers perform various kinds of analyses easily and confidently, without requiring a detailed understanding of statistics. They can conduct recency, frequency and monetary value (RFM) analysis, cluster analysis, and prospect profiling. They can also improve marketing campaigns through postal code analysis, propensity scoring, and control package testing. And they can easily score new customer data and access pre-built models.

Statistics Exact Tests

Statistics Exact Tests always provides you with correct p values, regardless of your data structure, even if you have a

small number of cases, have subset your data into fine breakdowns or have variables where 80 percent or more of the responses are in one category.

Statistics Forecasting

Improve forecasting with complete time-series analyses, including multiple curve-fitting, smoothing models, methods for estimating autoregressive functions and temporal causal modeling. Use the Expert Modeler to automatically determine

which ARIMA (autoregressive integrated moving average) process or exponential smoothing model best fits your time-series and independent variables, eliminating selection through trial and error.

Statistics Missing Values

If values are missing from your data, this module may find some relationships between the missing values and other variables. In addition, the missing values module can estimate what the value would be if data weren't missing.

Statistics Neural Networks

Use the Statistics Neural Networks module to model complex relationships between inputs and outputs or to discover patterns in your data. Choose from algorithms that can be used for classification (categorical outcomes) and prediction (numerical outcomes). The two available algorithms are Multilayer Perceptron and Radial Basis Function.

Statistics Regression

Predict behavior or events when your data go beyond the assumptions of linear regression techniques. Perform multinomial or binary logistic regression and nonlinear regression, weighted least squares, two-stage least squares and probit analysis.

Complementary product

Use these products with Statistics for Data Analysis to enhance your analytical results.

Statistics Amos

Support your research and theories by extending standard multivariate analysis methods when using this stand-alone software package for structural equation modeling (SEM). Build attitudinal and behavioral models that more realistically reflect complex relationships, because any numeric variable, whether observed or latent, can be used to predict any other numeric variable. The latest release includes a new nongraphical method of model specification that improves accessibility for users who need scripting capabilities and enables large, complicated models to be run more quickly.